

PRINCIPLES
OF
ABNORMAL PSYCHOLOGY

REVISED

BY
EDMUND S. CONKLIN
INDIANA UNIVERSITY



NEW YORK
HENRY HOLT AND COMPANY

COPYRIGHT, 1927, 1935,
BY
HENRY HOLT AND COMPANY, INC.

September, 1940

PRINTED IN THE
UNITED STATES OF AMERICA

To

HANFORD M. BURR

*teacher, mentor, friend to whom I owe so
much, as do all who have had the
privilege of sitting in his classes,
this book is most affection-
ately inscribed*



PREFACE TO SECOND EDITION

Readers who are familiar with the first edition of this book will naturally look first for the changes which appear in this edition. I trust they will observe that, in addition to many minor corrections, the literature since the first edition has been carefully reviewed and material from it has been inserted at many points. Wherever possible I have added contributions from the welcome and promising experimental studies of the abnormal now growing in frequency. Major additions will be found in the inclusion of sections or chapters on speech abnormalities, constitutional psychopathic inferiority, the behavior effects of epidemic encephalitis, and on psychotherapy. The latter is a chapter which I have inserted because of many requests. There is still some question in my thinking of the propriety of including a discussion of psychotherapy in a book on abnormal psychology, especially one which is primarily used by college students and written by a psychologist. I still think of psychology as a basic science. The art of applying knowledge gained from all fields of psychological research, as well as many other sciences, to the care and treatment of persons manifesting abnormalities of behavior is the task of psychiatry and the psychiatrist. I am a psychologist and not a psychiatrist; and most of my readers are students of psychology, not of psychiatry. Nevertheless, there is no reason why the educated layman should not know the basic principles of current psychotherapeutic methods, and the advanced students of psychology ought to know them. It is even possible that the dissemination of such information might contribute not a little to a better popular attitude toward psychiatry and the needs of the psychiatrists.

One notable change which will amuse, and I hope satisfy,

some of my friends and critics is the change in the order of topic presentation. The psychoneuroses now precede the psychoses. This makes possible a more systematic development of psychogenic interpretations before the major forms of abnormality are considered. I have done this because of the growth and increasing influence of psychogenic ways of thinking.

The first edition of this book was adversely criticised by some for its failure to present any particular system of psychological interpretation. Those critics will be likewise disappointed with this second edition. I considered the matter carefully and am still convinced that the better plan is to introduce the student and the general reader to the actual situation in the field of abnormal psychology, which is emphatically not that of domination by any one system of interpretation. I believe such an introduction will produce a better orientation for further study and for an understanding of the work of the many who are constantly investigating and publishing in the field of the abnormal.

In addition to the obligations mentioned in the preface to the first edition, I am now indebted to a large and growing number of persons, too many by far for individual mention here. Among them, I am proud to say, are many physicians, some of them practicing psychiatrists, who have honored me by requests for assistance with abnormal cases or who have given me the privilege of seeing them at work. The association with these men and the cases which they have shown me have molded my attitudes and taught me much that cannot yet be found in books and journals. The best I can wish for any teacher or investigator in these fields is that he may have as happy and instructive a relationship to the medical profession as I have long had and still enjoy.

E. S. C.

Bloomington, Indiana,

June 27, 1935.

PREFACE TO FIRST EDITION

This book was designed for my students and is the outgrowth of my many attempts to help them to a knowledge of the always fascinating field of the abnormal and its borderland in human behavior. It is designed for advanced undergraduate students in psychology, although it may not be without interest and possibilities of instruction to many others. A knowledge of the facts and the interpretations current in the conventional textbooks of general psychology is presupposed. In a sense this is an introductory text, as it is designed to introduce students to certain special fields of psychological investigation. No attempt has been made to produce an exhaustive manual. Such a comprehensive treatment would have resulted in a volume too large for the purpose in mind. Much literature has therefore been omitted and much more has been but briefly summarized. What has been included has been primarily selected because of its intrinsic significance, although the teaching problems involved in accessibility have not been out of mind particularly in the enumeration of reference titles.

So far as possible I have sought to hold to a detached attitude in the presentation of theories and interpretations. Where there is so much conflict of opinion it has seemed the better pedagogy to introduce the student to the main trends of interpretation held by the more prominent schools of theory. Criticisms of these are included, of one as freely and as willingly as of another. The student must not at the outset be prejudiced but must be shown what is being thought and the bases for the controversies which exist.

I have written as a psychologist for students of psychology. After introducing the student to certain indispensable terms and interpretative concepts it is my practice to push the stu-

dent rapidly into a consideration of the more extreme forms of abnormality. With his appetite for a knowledge of insanity thus somewhat appeased and with the training gained thereby he is much better prepared for the borderland phenomena. I deliberately postpone in my teaching, and have done so in this book, all discussion of hypnotism, spiritism, dreams, mental effects of drugs, feeble-mindedness and genius until after the student has been well trained in the phenomena of psychosis and psychoneurosis. He then looks upon hypnotism, spiritism, etc., as so much clinical material upon which he can bring to bear the knowledge he has previously acquired. I have tried many other arrangements but have found this to be far the best pedagogy.

My emphasis has been upon the psychology of abnormal behavior and not at all upon methods of treatment because my point of view is that of the scientist and not that of the medical practitioner. I think of the psychology of the abnormal as one of the basic sciences indispensable to the modern practice of medicine. This distinction between psychology and medical practice must be early impressed upon the student and not infrequently reemphasized.

Only one who has written a book knows how deeply an author is indebted to others. It is impossible to enumerate the many who have helped by their instruction and by their generous criticism. The list is long. But the names of two must be mentioned, the first and the last. My interest in the abnormal and the borderland was first aroused many years ago in those clinics so masterfully conducted by Edward Cowles, who contributed much to the development of the functional study of the psychoses. In recent years I have been indebted most of all to Dr. L. F. Griffith of the Oregon State Hospital, for innumerable courtesies and for the privilege of seeing cases and theories illuminated by the critical insight which has come from his long experience with the mentally diseased. Most of the cases used in the presentation of the psychoses were cor-

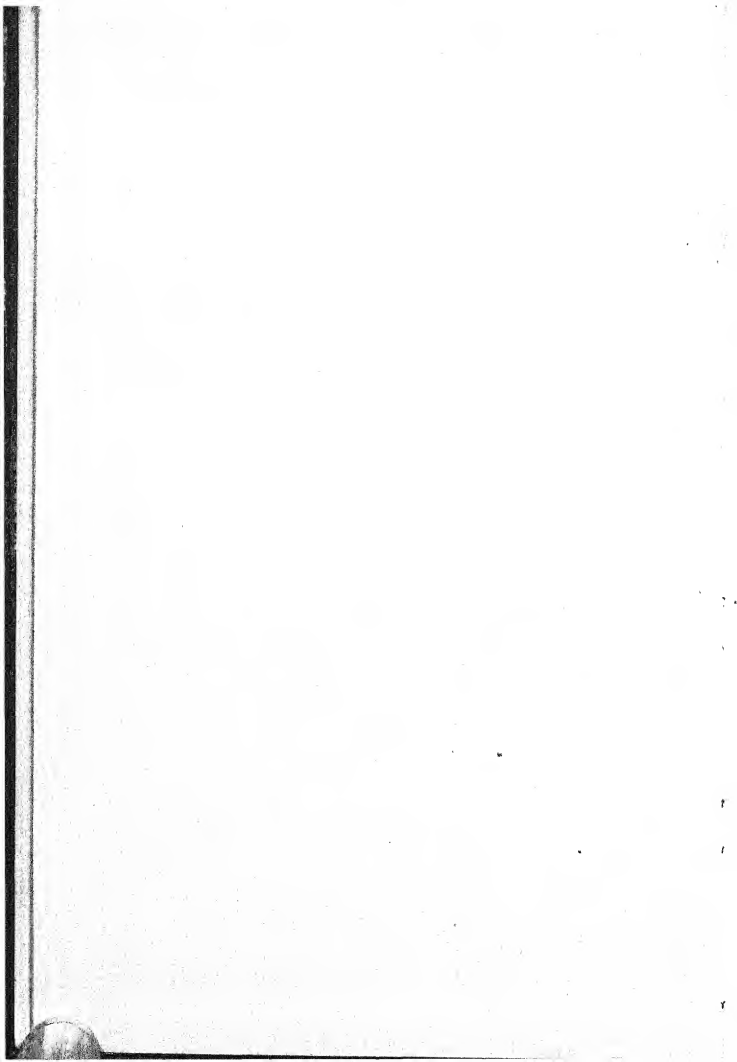
dially provided by him and his associates. For the interpretations offered, however, they must in no wise be held responsible.

For the privilege of using other illustrative material I wish to thank the publishers of the *American Journal of Psychology*, the *American Journal of Insanity*, the *Psychological Review*, and the *Psychiatric Bulletin*. And to my colleague, Professor Horace G. Wyatt, I am indebted for many valuable suggestions as well as for his careful reading of the proof of this book.

E. S. C.

Eugene, Oregon,

April 15, 1927.



CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	I
	Definition of abnormal, personality organization, levels of function, relation to autonomic system, adjustment and maladjustment, theories of the unconscious, Hart's argument, Freudian theory, modifications of Freudian theory, other theories, personality types, abnormal relationships questioned, introversion and extraversion.	
II.	PSYCHOGENIC INTERPRETATIVE CONCEPTS	28
	Physiogenic explanations, psychogenic explanations, physiogenic and psychogenic interpretations combined, specific maladjustment concepts (complex, morbid complex, drives, defense mechanisms, compensation, fixation, sublimation, rationalization, displacement, condensation, over-determination, projection, introjection, regression, symbolization, fantasy thinking, reality thinking, transference).	
III.	SENSORY ABNORMALITIES, ILLUSIONS AND HALLUCINATIONS	54
	Congenital and early adventitious sensory defects, later adventitious sensory defects, amputation effects, synesthesia, defects of cutaneous-kinesthetic perception, illusions, illusions vs. hallucinations, hallucinations, theory of hallucination, pseudo-hallucination, classification, hypnagogic hallucination, meaning in illusion and hallucination.	
IV.	MEMORY ABNORMALITIES	80
	By defect of impression, by defect of retention, by defect of reproduction, by defect of recognition, hypermnesia, aphasia.	
✓ V.	THE PSYCHONEUROSES	97
	Phobias, obsessions, compulsive acts, psychasthenic tics, psychasthenic theory (redintegration, isolated	

pattern, Janet's lowered psychological tension, psychoanalytic), neurasthenia, anxiety states.

✓ VI. THE PSYCHONEUROSES (*Continued*) 116

Hysterical convulsive seizures, fugues, somnambulisms, narcolepsy, paralyses, anesthetics, tics, contractures, tremors, "hysterical pain," simulation of organic disease, causes (mental stress, age, defective discipline, native endowment, maladjustment, organic, suggestion, disasters), Charcot's theory, Babinski's theory, Janet's theory, psychoanalytic theory.

VII. MULTIPLE PERSONALITY 147

Common misconceptions, general characteristics, Beauchamp case, Norma-Polly-Louise case, causes, possible number of personalities, criteria of secondary personality, interpretations, methods of treatment.

VIII. SPEECH ABNORMALITIES 161

Statistical studies, personality effects, defects by brain lesion or native deficiency, defects of articulation not due to brain lesion, stuttering, imaginal defect theory, defective physiological dominance theory, maladjustment theory, treatment of speech abnormalities.

IX. DISTORTED THINKING (PARANOIA) 174

Effects of excessive fatigue, worry, other emotional distortions, distinction between normal and abnormal, nature of a delusion, paranoia, abnormal extraversion and introversion, summary of causes.

X. MAJOR FORMS OF ABNORMALITY 189

Introduction to terms, schizophrenia (paranoid, catatonic, hebephrenic, simple, mixed, dementia praecox, experimental studies, theory), paresis, senile dementia, other deteriorating states.

XI. MAJOR FORMS OF ABNORMALITY (*Continued*) 213

The epilepsies (salient features of seizure, variant forms, frequency and effects of seizures, interpretations, heredity problem, experimental studies).

CONTENTS

xiii

CHAPTER

PAGE

XII. MAJOR FORMS OF ABNORMALITY (*Continued*) 227

Manic-depressive psychoses (manic phase, depressed phase, mixed forms, cases, psychological similarities, interpretations, experimental studies), thyroid disturbances, psychasthenic depressions, involutional melancholia, hygienic aspects.

XIII. THE ABNORMALLY ENDOWED 242

Meaning of amentia, definition of feeble-mindedness, classification by intelligence, idiocy, imbecility, morosity, growth relationships, experimental studies, causes of feeble-mindedness, distinctive forms of feeble-mindedness, moral imbecility, social aspects, constitutional psychopathic inferiority, interpretations of constitutional psychopathic inferiority, genius (degeneracy theory, prophetic theory, special trait endowment, psychogenic theory).

XIV. SLEEP AND ITS ABNORMALITIES 287

General characteristics, intermediary states, physiological studies, "depth of sleep," motility in, amount of, partial, theories, "sleep center," abnormalities (effects of loss of sleep, insomnia, night terrors, walking in sleep, prolonged sleep states), narcolepsies, sleep of the insane, drugs and sleep.

XV. BEHAVIOR EFFECTS OF EPIDEMIC ENCEPHALITIS 319

General description, sequelae, personality and behavior effects, interpretations, possibility of re-education.

XVI. HYPNOTISM AND SUGGESTIBILITY 325

Induction of hypnosis, appearance in, positive suggestions, negative suggestions, hypnotic delusions, alterations of sensitivity, alterations of motor functioning, alterations of circulation of blood, memory effects, volition and choice, stages of, physiological aspects, waking from, who can be hypnotized, who can hypnotize, suggestion and suggestibility, theories, crowd hypnosis, therapeutic values, hypnosis and the phenomenal, dangers of.

XVII. DREAMS 363

Relation to course of sleep, content of, by experimental stimulation, speed of, relation to waking

consciousness, absurdity of dream content, forgetting of, hallucinatory nature, types of (premonitory, prophetic, prodromic, collective, kinesthetic, paralysis, of the blind, of the deaf, recurrent, nightmare, of the dead), theories, interrelation of theory, day-dreaming, Boverism, delirium, dreams and psychosis, dreams and psychoneurosis.

XVIII. PSYCHOTHERAPY 401

Case history, determination of personality pattern, discovery of repressed material, indirect methods (dream analysis, free association, association to selected stimuli), direct methods (crystal gazing, automatic writing, hypnotism, direct questioning), psychotherapeutics, range of psychotherapeutic application.

XIX. MENTAL EFFECTS OF DRUGS 427

Alcohol, tobacco, caffeine, morphin and cocain, mesical, anesthetic drugs.

XX. SPIRITISTIC PHENOMENA 453

Fraudulent mediums, physical phenomena without trance states (muscle reading, table-tipping, ouija board, planchette, automatic writing), physical phenomena with trance states, telepathy and allied phenomena (crystal gazing, ghosts and apparitions, dowsing), sources of error, trance states, mediumistic "communications."

XXI. THE HISTORICAL AND BIOGRAPHICAL BACKGROUND 494

Ancient conceptions, Hippocrates, Galen, Boerhaave, Pinel, Esquirol, Mesmer, Gall, Griesinger, Krafft-Ebing, Kraepelin, Charcot, Bernheim, Rilot, Janet, Lombroso, Jackson, Freud, Jung, Rivers.

INDEX 515

CHAPTER I

INTRODUCTION

DEFINITION OF ABNORMAL, PERSONALITY ORGANIZATION, LEVELS OF FUNCTION, RELATION TO AUTONOMIC SYSTEM, ADJUSTMENT AND MALADJUSTMENT, THEORIES OF THE UNCONSCIOUS, HART'S ARGUMENT, FREUDIAN THEORY, MODIFICATIONS OF FREUDIAN THEORY, OTHER THEORIES, PERSONALITY TYPES, ABNORMAL RELATIONSHIPS QUESTIONED, INTROVERSION AND EXTRAVERSION.

The field of abnormal psychology has never been quite satisfactorily delimited and distinguished from other fields of psychology. Perhaps it never will be. Scientists have long since come to realize that the field of human knowledge is one and that delimitations within it are always arbitrary; and yet for practical purposes distinctions are made and found useful. About the more extreme forms of abnormality no questions arise as to their placement; but there are many instances, or phases, of human behavior which are near the borderline between that which is commonly accepted as normal and that which most people would consider abnormal. These make nice distinctions difficult. And then, too, there is the wide range of individual differences in native endowment, or what is commonly accepted as being native. Some people have contended that these differences should never be looked upon as abnormal; while others believe that many instances of abnormal behavior, even in adult life, are unquestionably the product of such quantitative peculiarities in native endowment. For these reasons it is necessary to accept any definition of the abnormal tentatively, as one is obliged to do with many of the so-called facts of science.¹

¹ Bridges, J. W., "What is abnormal psychology?" *J. Abn. & Soc. Psychol.*, 1930, 24, 430-432. Davies, A. E., "What is abnormal psychology?"

Definition. For practical purposes, abnormal psychology may be thought of as the study of those forms of human behavior which differ sufficiently from those which are commonly accepted as normal to be recognized as different, irregular, or disordered. These forms of human behavior may be determined either by objective or subjective methods of observation, or by some combination of the two. They may be brought about organically, by diseased or defective structures within the body; they may be brought about functionally, through conflicts with the social order in a trying growth experience, or through the development of conflicting patterns within the personality organization; and they may be the product of peculiar combinations of circumstances within and without. It is possible that there may be also native constitutional defects or peculiarities which contribute to or eventuate in functional disturbances.

It should be recognized that there are instances of superiority and of inferiority in native endowment and in personal achievement which cannot with full propriety be classed as abnormal. Examples of these are found in the lower and the higher degrees of general mental ability. Strictly speaking they are instances of supernormality and of subnormality. Nevertheless they are of the unusual in human nature, and they are frequently observed in association with, or to be definitely the cause of, behavior which may properly be classified as abnormal. Therefore they are included in the chapters of this book.

It should be observed that the field of abnormal psychology so described is more inclusive than the field of *psychopathology*. It seems proper to limit this term to the designation of those abnormalities which are due to or are closely related to some mental or physical disease. Abnormal psychology would for example include a study of hypnotic phenomena, much of

J. Abn. & Soc. Psychol., 1931, 26, 117-124. Kahn, Eugen, *Psychopathic Personalities*. New Haven, Yale Press, 1931. Pp. 521. Skaggs, E. B., "The meaning of the term 'abnormality' in psychology," *J. Abn. & Soc. Psychol.*, 1933, 28, 113-118.

which cannot be attributed to disease of any sort, and also the claims for telepathic communication.

And it should further be observed that abnormality frequently appears in the nature of the setting, or the general pattern. The emotion of fear, for example, is not in itself abnormal, and is always presented in textbooks of general psychology. The same may be said of the perception aroused by the sound waves set up by a distant railroad train. But when the perception of a railroad train in the distance stirs an intense fear, then does one observe a pattern that is so unusual and inappropriate that one is inclined to consider it as abnormal. Likewise, a clear visual image is not in itself abnormal; but when it occurs with the meaning of objectivity and objective reality and displaces the field of vision which others near by experience, then does one feel justified in describing the general pattern as abnormal.

Ordinarily it is possible to demonstrate the existence, or the possibility, of a continuous series of gradations between that which is accepted as normal and that which is accepted as abnormal. As has already been indicated, this has frequently contributed to the difficulty of agreeing upon a distinction between the normal and abnormal. But it also presents a practical problem for which working solutions are sometimes necessary. Thus arbitrary criteria are often set up and used as distinctions, where no distinctions exist in nature. Where they are met with they must be accepted and used for what they are worth, although always without forgetting that they are purely arbitrary and used for convenience. Good examples of this appear in the scoring of tests for neuroticism. Comparable arbitrary distinctions appear in the classificatory distinctions between idiot and imbecile and moron.

Personality Organization. So much of the interpretation of the abnormalities of human behavior rests upon a working knowledge of the general nature of the personality organization, it seems necessary to restate the matter here. Personality is

now most frequently used as designating the sum total of the individual, especially as it impresses others. This means then that within the personality is all of that which was received by native endowment as well as all of that which has been acquired. In the process of acquisition there has been much interplay between that which was growing by a process of maturation within and that which confronted the organism from without. Through the processes of maturation and acquisition new functional patterns are, especially in the first twenty-five years of life, constantly coming into existence. And, through that course of change now commonly referred to as conditioning, new relationships between stimuli and responses are frequently developed. All of these changes and developments and acquisitions enter into and determine the general nature of the personality pattern as a whole.

But, in addition to the differences of personality pattern, important as they are, it is necessary to recognize differences in what is termed ordinarily the degree of *integration* within the personality. Some personalities manifest in their behavior a nice relationship between the many functional patterns within; while other personalities give evidence through their behavior that they are very loosely organized or integrated. Some personalities are poised and their behavior appears to be controlled, appropriate and nicely graded. Other personalities appear to be unstable, erratic, and impulsive, manifesting reactions that seem to lack the controlling influence of the rest of the patterns known to be within.

Looseness of integration is characteristic of children and those in the earlier years of adolescence. One of the outstanding effects of the discipline found in the average home and school and social life is the forcing of interrelationships between behavior patterns, to the end that each growing individual shall eventually respond in a more organized and controlled manner. Thus, through childhood and adolescence, there is a progressive approximation toward the organized or

integrated personality of maturity. That adolescents have not yet achieved a fully integrated personality but are still in process needs to be kept constantly in mind when attempting to interpret the abnormalities of adolescent behavior.

It should also be recognized that among adults there are large individual differences in the degree of integration between the many functional patterns making up their individual personalities. Some are almost childish in the looseness of their organization. And from that extreme all gradations will be found running through to those who are as perfectly poised and organized as adults ever become. These differences are frequently significant in the explanations of abnormality. Perhaps these differences may be intrinsically determined, but of this there will be more specific mention where the problems concerning it arise.

The term *synthesis* needs also to be observed in this connection. It is often used and usually as a synonym for integration. While a surplussage of technical terms is disturbing and unfortunate, nevertheless it is necessary for anyone who would read the literature of abnormal psychology to know the language used. For this reason both terms will appear in the pages of this text.

Levels of Function. Within the personality organization it is customary to think in terms of three levels of function. The lowest of these, spinal cord and medulla, is composed of reflexes and such automatic functions as breathing and circulation. The second or middle level is composed of the more complicated functions of the basal ganglia, thalami, corpora, striate bodies, etc. In this level are the patterns for whatever instincts may exist and for emotional reactions. Recent studies indicate also the presence of a sleep center in this level. The highest of the three levels, by some termed the first and by others the third, is the cerebral cortex.

In the development of the individual, the highest or cerebrocortical level is the most recent. For the student of abnormal

psychology this level is of prime importance. In this is to be found the patterns which correspond to all the newer adjustments, interpretations, and skills of life. The matter of integration or synthesis or degree of organization of the personality is largely, although not entirely, a matter of the development and organization of this level. That this cerebro-cortical level exercises a controlling or inhibiting function upon the instinct-emotion reactions of the second level is now well established. Children show far less control of their emotional reactions because their cerebro-cortical development is immature. Some adults have poor control of the second level chronically; others manifest such a loss of control when under the influence of fatigue or of drugs. Many significances of this relationship between the levels will be observed as the many forms of behavior disturbance are examined.

The doctrine of the sentiment presented by McDougall,¹ so much used and upon which McDougall bases his interpretation of many forms of abnormality, must also be related to this conception of functional levels. The sentiment of McDougall, it will be recalled, is a nervous pattern established in the central nervous system as the consequence of much emotional experience with an object or an idea. This sentiment is not itself conscious but is a pattern governing what emotions shall be aroused and to a considerable extent the relative intensity of their activation. Obviously such a pattern must be thought of as developing within the cerebral cortex primarily, but also reaching down and coming into intimate contact with second level patterns. If such patterns exist, and there must certainly be something approximating McDougall's concept of sentiments, disruption or distortion of them must be present in not a few forms of abnormality.

There is yet another use of the term level of function with which the student should be familiar. Not infrequently specialists in the interpretation of abnormalities think in terms of

¹ McDougall, Wm., *Social Psychology*, chaps. 5, 6, 7.

lower and higher levels of function without any special relation to anatomical levels of the central nervous system. They think of the infant as reacting on a very low level of function, of the child on a higher level, of the adolescent on a still higher level, and of adults normally on still higher levels. And this is related also to the concept already presented of integration. Some individuals are said to be well integrated up to a certain mentioned level of function and but poorly integrated above that. Such an individual may try to live at the higher levels but with difficulty and is frequently slipping back to the lower level for which he is better equipped. Disease may so disturb the patterns of the highest level of functioning to which an individual has attained that a re-organization of life is forced at a lower level. This is a convenient concept and does seem to fit the facts very well. It will be met with not infrequently.¹

Relation to Autonomic System. Anyone who attempts to read the literature on abnormal behavior will quickly find that its authors constantly assume a knowledge not only of the central nervous system but also of the autonomic system and the functions which it serves. The terminology used ordinarily conforms fairly well to that found in most texts on general psychology but not always. Hence the reader must be on his guard and watchful of the context. The most frequently used terms for the three divisions of the autonomic system are the cranial (milder comfortable emotions or feelings accompanying unhindered operation of vegetative functions), the sympathetic (emergency emotions of fear, anger, etc., involving inhibition or disturbance of the vegetative functions), and the sacral (sex feelings or emotions and the feelings related to elimination). The opposition between the reaction tendencies of the sympathetic division on the one hand and the cranial-sacral divisions on the other must never be lost sight of. The

¹ Examples of this type of thinking in terms of levels will be found in the following: Bailey, P., "The psychology of human conduct; a review," *Amer. J. Psychiat.*, 1928, 8, 209-234. Kretschmer, E., *Hysteria*. New York, Nerv. & Ment. Dis. Pub. Co., 1926. Pp. 120.

close relationship between the cranial and the sacral divisions has led many to speak of them by the single term para-sympathetic. Disturbances of these relationships and especially of the balance between the parasympathetic (cranial-sacral) and the sympathetic divisions are involved in many behavior disorders.¹

Adjustment and Maladjustment. In the interpretation of behavior problems these terms, adjustment and maladjustment, have come rapidly into active use. Attention to definition of them has not, however, been as active; and, as a consequence, there is not a little confusion. Again the reader must be on his guard and watch for the special meanings implied by any particular author who uses them.

For the present author, the terms are concerned with the suitability and unsuitability of the dominant reactions to the world as perceived and conceived by any given individual. When a person perceives that it is for the time being dangerous to attempt crossing a street because of the congestion of traffic, he is to be thought of as well adjusted if there is inhibition of the advancing pattern and a domination by the pattern of standing still until the street clears. There might be in the general response a touch of fear at the outset, at the moment of perceiving the dangers of the street, but no more than a mild awareness of the fear. As soon as the street is perceived to be safely clear, the advancing pattern again becomes dominant and, unaccompanied by any fear, the person walks calmly across. When the other sidewalk has been reached, a new situation is perceived and another shift in the pattern of reactions takes place because of the necessity of fitting into the course of pedestrian traffic. So, from change to change, the well-adjusted person continues on his way meeting each new situation with clear perception and understanding and with action patterns that are quite harmonious. Adjustment thus will be observed

¹ For more complete presentations see Cannon, W. B., *Bodily Changes in Pain, Hunger, Fear and Rage*. New York, Appleton, 1929 (2nd ed.) Pp. 404. Gates, A. L., *Elementary Psychology* (Rev. ed.), pp. 187-200.

to be a continuous process. The well-adjusted person is one whose patterns of reaction are harmonious and suitable to the situations of life as they are perceived. Of course there may be large differences in the way the situations of life are perceived by different individuals, and their dominant reactions may as a consequence be different; but, if to the world as perceived, the reactions are suitable and harmonious then that person may be thought of as adjusted.

The maladjusted person must obviously be the converse of that just presented. A comparable example will serve. If a person confronting the congested street-crossing perceives that it is unsafe to attempt to cross and yet at the same time experiences an almost uncontrollable impulse to do so, then that person has conflicting reactions aroused, some of which are quite unsuitable to the situation as perceived. If, again, one finds an individual who, upon facing a street-crossing where there is no traffic whatever, perceives the prospect of crossing as being simple and wholly without danger and yet experiences an overwhelming fear, then that person is experiencing reactions which are conflicting and unsuitable. Such a person is maladjusted. And yet again, if when a person meets a situation in life which is perceived as somewhat complicated and difficult, and, instead of studying the situation carefully as a preliminary to the most appropriate action he can discover, that person should withdraw into day-dreaming of great over-coming achievement, then would one also recognize that there is a maladjustment because of the notable lack of suitability in the reaction which dominates.

That there may be degrees of adjustment and maladjustment must be obvious. Few indeed are the persons who always upon all occasions respond harmoniously and suitably. Failure to adjust well at times is an experience which most people know. But few of us who make such occasional slips would think ourselves properly classifiable as maladjusted. When, however, such imperfections of adjustment become too frequent,

especially when some obvious unsuitability appears with regular recurrence, and the individual is rendered thereby incapable of living comfortably and acceptably with other people, then does the designation of maladjustment become appropriate. At the other extreme will be found individuals so lacking in suitable and harmonious reactions that they are forced to live under constant supervision in hospitals for the insane.¹

Theories of the Unconscious or Subconscious. The student who is new to the field of abnormal psychology may be surprised to find that much of the literature on abnormal phenomena assumes the existence of a subconscious, or at least makes much use of the concept for explanatory purposes. Text-books in general psychology as a rule neglect theories of the subconscious entirely or seek merely to show the absurdity of such notions in the light of systematic general psychology. Even though, however, all concepts of the subconscious or unconscious be ultimately abandoned, no student of the abnormal can wisely cast them aside at the outset. Certainly not if he hopes to be able to read the literature of abnormal psychology intelligently.

Without doubt the most influential theory of the subconscious current today is that first suggested by Sigmund Freud and now generally known as the psychoanalytic theory. In the years since its introduction it has undergone many changes, some of them proposed by Freud himself. Many specialists working with abnormal problems have been led to develop modifications of their own. The result is a confusing conflict of opinions and a bewildering development of technical terminology. But for a working introduction, the student needs merely to have at his command the general argument upon which the theory of an unconscious or subconscious of some form is based, and also the scheme as first presented by Freud with its more significant later modifications.

¹ A very clear and useful presentation of the concept of adjustment will be found in Professor R. S. Woodworth's book entitled *Adjustment and Mastery* (Baltimore, Williams and Wilkins, 1933. Pp. 137).

Hart's Argument. The general argument or justification for the development of a theory of the subconscious or unconscious has been best presented by Bernard Hart.¹ He points out that it is possible to think physically and physiologically of a closed or continuous causal sequence. In fact there have been students of human behavior who have suggested that a complete knowledge of the physics of stimulation and the physiology of response would be a complete explanation of human behavior. Certain it is that the physiologist does not introduce psychological concepts into his sequence. He always thinks in terms of physical phenomena. For him the stimulus produces activity in a sense organ, that in turn activity in a sensory tract, that arouses the sensory center of the cortex, that some association area, that some portion of the motor area, that the motor tract and the motor neurone stimulates the muscle. Such a sequence never includes an idea, or perception, or process of imagination or of will; it keeps strictly to the physical aspect of the process. Hart, like many advocates of psychoanalytic theory, argues that there is also the psychological aspect of the process or chain of processes, and that when we are thinking of the psychological aspect we should no more include physiological processes in the sequence than we include psychological concepts when we are thinking of the physiological sequence. As the physiologist never includes an idea or percept or a will into his sequence the psychologist should always stay on his own side of the fence. Such a position is based upon a thorough-going parallelism, either monistic or dualistic.

It will be recognized at once that there are many gaps in the psychic sequence. There are longer or shorter interruptions by sleep, which make each period of waking consciousness relatively isolated. Dreams are at least to be thought of as still more isolated periods of consciousness. And there are many instances of conscious processes appearing in the stream of consciousness which seem to be totally inexplicable in terms of

¹ Münsterberg, Ribot and others, *Subconscious Phenomena*, chap. VI.

any of the preceding conscious processes. Inspirations, free-rising ideas, "hunches" and the like are good examples of such apparently uncaused processes. The course of consciousness seems too seriously interrupted for one to think of it as a continuum. But it is those very gaps which Hart argues should be supplied with a theory of the subconscious if one is to stay on his own side of the scientific fence and be consistent in his thinking. No physiologist knows all the steps or processes which intervene between the stimulus and the visible response, and he does not hesitate to fill his gaps with theories couched in terms of the physiology of adjacent and somewhat similar activities. A good example of this is to be found in the theories of the operation of the retina. These are always clearly physiological and chemical. Then when one is thinking of the psychological aspect one should, the argument runs, think of it as a continuum and supply the gaps with theory couched in terms of the psychic.

Freudian Theory of Psyche. Freud's earlier scheme of thinking about the human psyche, although abandoned in large part today, still has an extensive influence. It assumed the existence of a psyche which had three significant divisions or parts. It was often termed tripartite in consequence. The psyche was presented as composed of that which we know as conscious, of that which was called the fore-conscious (then as now occasionally referred to as the pre-conscious), and of the unconscious. It will be observed that what many describe as the subconscious is here assumed to be differentiated into the fore-conscious and the unconscious.

The content of the *conscious portion* of the psyche was assumed to be the same as that which is studied in normal general psychology as the content of consciousness. The gaps in this as a sequence and some of the peculiarities of its content were thought of as explainable in terms of the influence upon it of the fore-conscious and the unconscious. The *fore-conscious* was supposed to contain memories that could be voluntarily

recalled or which could be easily aroused, and, also, such incompleting or arrested trains of thought as had been temporarily displaced by intrusions from the environment. Such displaced trains of thought were not looked upon as in any way disagreeable and certainly not to be considered as incompatible with the ideals or moral standards of the individual.

The earlier conception of the *unconscious* is a little more difficult to grasp. It must not be thought of as composed of ideas nor in terms of any differentiated form of attentive consciousness. Psychoanalysts often said that the "unconscious can only wish." By that they seem to have meant that the unconscious was never ratiocinative. It was merely a vague undifferentiated impulse, push or drive. It was supposed to be like what has often been thought of as the consciousness of the lower animals or of our prehuman ancestors. In fact it is much easier to grasp this notion of the unconscious if one thinks in philogenetic terms. Man is supposed to have been in his prehuman, and perhaps in his very primitively human, forms possessed entirely of a psyche like that of the unconscious portion of the psyche of the modern man. With prehuman beings or very primitive man there was no thinking, no reasoning, no constructive imagination, just the undifferentiated consciousness of intense drives or impulses, of rages, hungers, fears, passions. Such a creature did not *think* and did not know that he did not think. Time passed and with it crude forms of thought developed and with thought customs and some language. The customs thought of and expressed in language terms were rudely enforced and children were trained to them by force. This meant a very definite checking of the older unthinking bestial freedom. This process of differentiation grew with the ages and the passing generations until the thought and language life of man became highly developed and with it came a high development of standards, rules, and regulations of conduct. All of which checked, suppressed or repressed the old bestial ways and the primitive forms of consciousness. It is

that very deep-lying, bestial, primitive, psychic life in us, buried under a mass of training, which psychoanalysts called the unconscious. When they said that it could only wish, they meant that it could only seek satisfaction of its impulses in a direct and primitive fashion. They thought of a wish as being quite different from the clearly conscious, highly definitized, wish described by the students of structural introspective psychology.

All of the repressing tendencies, suppressing features, and inhibitions just mentioned, which the race has achieved and which every individual is educated or trained into, were designated by the psychoanalysts as *the censor*. Sometimes this was referred to as the "intrapsychic censor." The actual nature of this censor was much debated. Many of the earlier authors frankly admitted that they did not yet know what it was, whence its energy came, and so on; but they did believe profoundly that there was something of the sort functioning within the psyche. It was presented as an influence lying between the fore-conscious and the unconscious and as having a marked controlling effect upon all unconscious impulses seeking conscious expression. A figure of speech used by Freud himself may be helpful. He spoke of the effect of that line of demarcation between a lighter and a denser medium upon a ray of light passing from the one medium to the other. There is, of course, nothing actually at that line of demarcation, and yet it has a marked effect upon that which passes or seeks to pass through it. In a comparable manner the censor, lying between the fore-conscious and the unconscious, was thought to have a distorting or transforming or even at times a completely inhibitory effect upon processes seeking to pass through.

How the psyche so conceived was supposed to function can best be approached through some examples contributed by the psychoanalysts themselves. One of the most distinguished of them (Ernest Jones) says that he was one day summoned from his study, where he was deeply absorbed in some writing. He

much preferred to stay at his writing, but that would have been contrary to his professional ideals, and so he put the desire out of mind and went to the hospital as was his duty. The wish to stay in his study and write was not killed. It was repressed and held down by the censor. Nevertheless it was still pushing, seeking expression. On arriving at the hospital he found difficulty in opening his office door and upon wondering why found that he was trying to open his office door with his house key. The desire to be at home, although repressed and unable to come directly into consciousness, was still active; and, when the hand went thoughtlessly into the pocket for the key, the repressed wish influenced the behavior of the fingers forcing the selection of a key appropriate to the wish rather than to the physical situation. Another example may be taken from Freud. He says that he had been frequently at a certain summer resort and always stayed in a certain hotel, which he found most satisfactory. One day a friend asked him to recommend a hotel in that resort. Upon attempting to do so he found to his disgust that he could not for the moment recall the name of this hotel, which was really quite familiar to him. He subsequently discovered that the name of the hotel was the same as that of a patient who was just then causing him a great deal of trouble. The whole complex of circumstances concerning the disagreeable patient had been repressed and of course along with it went the name which he desired to use in another, the hotel incident, connection. So, for the psychoanalyst, the little things of daily life which we sometimes think of as trivial take on large significance, slips of the tongue and hand and pen as well as what we forget are indicative of repressed wishes and through the discovery of the hidden meanings only can the full nature of the individual and his behavior be understood. In the interpretation of the more abnormal disturbances of behavior the same general procedure was followed; but before proceeding to the further use of the theory it is necessary first to observe its later modifications.

Modifications of Freudian Theory. Difficulties with some features of the older psychoanalytic concept of the psyche, especially that of the censor, and the demands made upon them by the nature of special abnormal cases have led the psychoanalysts to make many alterations in their scheme of thinking.¹ They cannot all be presented here. The limitation of space will permit only the inclusion of the most significant or those which are most necessary to the understanding of the discussions of abnormalities to follow. Here attention must be primarily concentrated upon the concepts designated by the terms id, ego and super-ego.

These terms are rapidly displacing the older ones of unconscious, fore-conscious, censor, and conscious. This does not mean that the concepts of conscious, fore-conscious and unconscious have been abandoned. Far from it. The term conscious is retained and still means about what it always has. The terms unconscious and fore-conscious are now used almost exclusively to designate the degree of relationship to, or difference from, those functions which are designated as conscious. Sharp lines of demarcation are no longer drawn. There is a gradation though from that which is clearly and definitely conscious to that which is as certainly unconscious. To the middle ranges of this gradation the term fore-conscious is now applied. This means a recognition of degrees of repression. Some of those functions termed fore-conscious are under so little repression that they are closely similar to the conscious. Others are under so much repression that they are far more like that which is properly termed unconscious. The terms id, ego and super-ego designate what are really groups of func-

¹ For the earlier scheme see Sigmund Freud's *The Interpretation of Dreams* (London, Allen and Unwin, 3rd ed., 1927). For the later developments see the following for an introduction: Freud, S., *Beyond the Pleasure Principle*. New York, Boni and Liveright, 1922. Pp. 90. Freud, S., *The Ego and the Id*. London, Hogarth, 1927. Pp. 88. Healy, Wm., Bronner, A. F. and Bowers, A. M., *The Structure and Meaning of Psychoanalysis*. New York, Knopf, 1930. Pp. xx, 482, xxiv.

tions without immediate regard for the degree of their consciousness or unconsciousness.

The *id* is that group of functions formerly designated as the unconscious. But the group has been much more carefully studied and more features of it are now listed and indicated by this term, the *id*. It designates all of those cravings of the body which are on an organic level. This includes the purely sexual craving of course; but it also includes the other organic needs, for food, for elimination, for warmth, and so on. These cravings tend toward immediate satisfaction. Delay is irritating, annoying, and productive only of more urgent, although blind, efforts at satisfaction. These are described in consequence as operating according to the *pleasure principle*. Considerations of propriety, decency, and so on do not appear in that which is purely of the *id*. Sometimes that which is primarily sexual in the *id* is referred to as the sex instincts. The plural should be especially noted: The psychoanalysts now think of sexuality as involving a number of allied urges or cravings.

All that the infant has is of the *id*. Differentiation and development comes as the consequence of contact with the outside world. This contact produces perceptions and so the *ego* begins to form out of these perceptual experiences. As the *ego* grows out of that which was originally *id* and as the *id* is dynamic so the *ego* is dynamic. In its earlier stages of development the *ego* desires are but slightly different from those of the *id*. They are as impulsive and as irrational. In contrast with the instincts of the original *id*, which are primarily sexual instincts, these cravings of the *ego* are frequently designated as the *ego* instincts. As development proceeds, there comes to be more or less opposition between the *ego* and the *id*, at least of some portions of the *ego*. About the content of the *ego* there is conscious reasoning, there is awareness of right and wrong and of propriety and of decency. There is consideration of

social demands and obligations, which means that for the satisfactions of the ego there must frequently be postponement, control and direction. This is contrary to the push toward immediate satisfaction characteristic of the id and described above as action according to the pleasure principle. The influence of social pressures and ideals forces the ego to become more and more concerned with future consequences and thus to operate according to a very different principle. This is termed the *reality principle*. Ideally there should be sufficient guidance of the id by the ego to prevent serious conflict between the two, but this is not always achieved. Where the conflict becomes too great, behavior disturbances appear which are classified as abnormal.

Concerning the definition of the *super-ego* there is more difference of opinion. It is a still newer concept. Many think of it as an outgrowth of the ego and as wholly or very largely unconscious. Into its formation go many influences of childhood. Its content is supposed to be especially influenced by the ideals and practices of the parents and in the selection of this content there is the influence of the affective relations between the child and the parent.

Perhaps the most significant feature of the thinking about this super-ego is the assumption that it is to a large degree opposed to the urges of the id, and that this conflict between super-ego and id is within that range of functions described as unconscious. This, it will be observed, is a notable change from the earlier concept of the psyche. In the earlier scheme the conflict was between the unconscious and the conscious. Now it is largely within the unconscious alone. The term *ego-ideal* will be not infrequently met and this can ordinarily with safety be treated as synonymous with the super-ego. It is also of interest to observe that the super-ego is often referred to as the psychic correlative of that which the moralists term the conscience.

With these changes, the censor of the older psychoanalytic

thinking has disappeared. It is no longer needed. All which it was used to designate is cared for in the nature and inter-relationships of the id, the ego and the super-ego. But the term has not been abandoned. Not infrequently the student of abnormal phenomena will find an author stating that some impulse or wish has been censored. By it he may only mean that the impulse or wish or complex is repressed or inhibited by the ego or the super-ego. In like manner, the term censorship remains in the vocabulary of the psychoanalysts; but it does not necessarily mean that the author who uses it knows only of the early scheme of thinking about the psyche.

Other Theories of the Unconscious. It should always be kept in mind that any theory of the unconscious is purely a theory. The advocates of some one theory may come to believe that it should be accepted as an established fact; but their enthusiasm must always be considered critically. A theory of the unconscious concerns that which lies beyond the limits of the experimental and can therefore never be more than an approximation even though it be admittedly a very acceptable approximation. At the present time, the psychoanalytic theory is in the ascendant; but it is still in the course of growth and change. It may be changed much more. Many who do not accept the whole scheme, and there is much more of it than has been presented here so far,¹ do make use of some of its concepts. But there are those who do not accept this scheme of thinking at all, and there are some very different theories of the unconscious. Notable among these are the theories of Pierre Janet and of Morton Prince which will appear in connection with the presentations of their interpretation of the phenomena of hysteria in later chapters.

Personality Types. One other item by way of introduction to the study of the abnormal must be fresh in the mind of the student. This is the relationship of current notions of person-

¹ Other features and items will appear as they are needed in the presentation of interpretations of abnormal behavior.

ality types to abnormal psychology. Of type classificatory schemes, there are a great many. But some of them have been developed by specialists in the field of abnormal behavior and are commonly used in their schemes of interpretation. They must therefore be given consideration.

The *cyclothyme* personality type is one characterized by a marked facility of emotional response and a wider range of emotional reaction than is characteristic of other kinds of personalities. As they are known in everyday life, they are usually popular because of their talkativeness, geniality, sociableness, and ready enthusiasm. Sometimes they appear somewhat naïvely egotistical. They are usually well-satisfied with the status quo; they believe in the motto of live and let live; and they are good boosters for whatever happens to be the currently approved good cause.

The only blemishes likely to be reported by the associates of such a person are a tendency to hasty action and occasional intrusions of quick temper. The more intimate associates or friends are, however, usually aware that behind or underneath all this openness and joviality there is a strain of melancholy. Gloominess, sadness, sorrow are like the joyful emotions, much too easily aroused. Such persons are too sympathetic; and anxiety is easily stimulated. In some, these depressed phases are more conspicuous than in others. Sometimes they are the dominant feature and in such cases there is often observed a vein of quiet humor in the background. Not infrequently people who are known for their humor are described as having a gloomy appearance on the surface. These characteristically gloomy folk have their periods of gaiety; and the characteristically gay are not infrequently known to their most intimate associates as suffering interludes of gloom.

The *schizothyme* personality type is in most respects quite the opposite of the cyclothyme. The schizothyme has few friends; is a poor mixer; and is generally looked upon as unsocial, reserved and eccentric. Emotions are easily aroused, but the

habits of life tend to conceal their arousal from others. The personal feelings are easily hurt, and there is much concern with the self. Practically all the affairs of life are interpreted in terms of their relation to the self. Objectivity of attitude and consideration is rare. Many are cursed by a chronic suspiciousness which they often regret as much as others. They may be loyally devoted to ideals which are rigorously held, ideals which others think poorly conceived and perhaps even rather odd. It should be needless to add that such persons are not understood by their associates and have much trouble when placed in positions of responsibility for others. This type is sometimes described as "autistic" and is also sometimes referred to as the "shut-in" type of personality.

These two types of personality, the cyclothyme and the schizothyme, are now receiving much attention by students of the abnormalities of human behavior because of the widespread belief that the type predisposes to the development of certain forms of abnormality. Neither of these basic types is thought of as in itself abnormal; but it is believed that if a person of the cyclothymic type should develop a pathological condition the kind of abnormal pattern developed would be allied to the pattern just described as cyclothymic. It would be cyclothymic to an exaggerated degree. Hence it is believed that the form of psychosis known as the manic-depressive psychosis, sometimes called circular insanity, is most likely to develop in persons of the cyclothymic type. Likewise, it is believed by many that the form of psychosis known as schizophrenia or dementia praecox is most likely to develop in persons of the schizothymic type. And some authors recognize the existence of borderline states which are correspondingly designated as cycloid and schizoid states or patterns of personality. Where mental functions are disturbed by demonstrable organic degenerations of the brain tissue or by drugs, the peculiarities of behavior manifested seem to be often determined by the type of personality existing prior to the disturbance.

There are psychopathologists who believe that the two types just presented manifest also a comparably characteristic physical pattern or habitus. The argument here is arresting. Intimate relations have been established between emotional reactions and the functioning of the endocrine system. Intimate relations have also been demonstrated between endocrine functioning and the development of a number of the anatomical structures. Therefore the contention is made that characteristic patterns of temperament which to so large an extent involve emotional behavior must carry with them characteristic anatomical patterns, or vice versa.

Of these physical types three are well-known, although there is now a marked tendency to reduce them to two. Of these the *pyknic* is described as being characterized by large body cavities. In proportion to the height the body from all angles appears to have relatively large diameters. The head and chest and abdomen appear peripherally to be big. This often gives to such a person a somewhat squat appearance although they may actually be of average or even greater height. Of adipose tissue there is always a plenty in these cases, and it is so nicely distributed that the body and limbs present a graceful, well-rounded appearance. The muscles may be strong and well developed, but they do not stand out conspicuously. The skin is smooth and well-fitting. This *pyknic* anatomical pattern is said to be the characteristic pattern of those persons who are endowed with the *cyclothymic* temperament. That there are exceptions must be admitted, and there are those who consider the exceptions sufficiently numerous to be damaging to this whole scheme of thinking; but there are a number of studies which appear to support the contention of such an association of personality type and anatomical habitus.

The *asthenic* habitus is presented as the antithesis of the *pyknic*. This is the long thin pattern. Whatever the height, the body cavities and the thickness of the limbs are small in proportion. The shoulders are narrow; the muscles and bones

are small and thin; and the chest appears long and flat. The skin is loose. Exercise may produce strong muscles but they never become large and conspicuous. Closely related to the asthenic is the *athletic* type. In proportional relations the athletic type is much like the asthenic. It gives the impression of length; but the whole gives an impression of greater physical strength. The shoulders are wider, the chest larger, and the muscles are conspicuous for their size. The bones are heavier and the hands larger. The skin is drawn tight over the big muscle development.

The asthenic and the athletic are both associated with the schizothymic temperament; and there are a number of studies which do indicate a greater frequency of these physical types in those who have been selected for study because of their manifest schizothymic personality. As in the case of the pyknic-cyclothymic relationship, there are those who question and there are admittedly mixtures and irregular cases; still it is a relationship which has received an extensive recognition. The obvious similarity between the asthenic and the athletic types and the fact of their relationship to the same psychological type has led many to throw them into one class. When this is done they are both referred to as belonging to the *leptosome* (thin-bodied) group.¹

Many assume the existence of what is termed an *epileptoid* personality. As in the instances already presented, there is the assumption that a very large proportion of those who develop epileptic disturbances have this epileptoid type of personality and that they had it long before the seizures appeared. And it is likewise assumed that there are vast numbers of people who have this general pattern of personality without ever hav-

¹ This scheme of types and type relationships has been developed and scientifically popularized by Kretschmer. Since his first publications there have been many other studies. An introduction to this literature may be had through the following: Kretschmer, E., *Physique and Character*. New York, Harcourt Brace, 1925. Pp. 266. Mohr, G. J. and Gundlach, R. H., "The relation between physique and performance in criminals," *J. Abn. & Soc. Psychol.*, 1927, 10, 117-157.

ing or being in danger of having epileptic seizures of any kind. The epileptoid personality is described as being not only self-centered, and as a consequence decidedly sensitive, but as also suffering a rather limited range of emotional possibility. There is a streak of ugly temper in them which makes its appearance more or less frequently. They are quite rebellious, although at times they may be very gracious and charming. Often they are described as having ambitions which are notably beyond the possible.

Abnormal Relationships Questioned. Although these relationships between the described personality types and the allegedly corresponding forms of abnormality must be recognized and understood by anyone who would read the literature of abnormal psychology, nevertheless they should be accepted with caution. There is a growing dissatisfaction with current schemes of classification of abnormal types which is based upon newer developments in interpretation. It may, for example, turn out that there is no such sharp differentiation possible between manic-depressive psychosis and schizophrenia. If that be true then the whole matter of relationship to these so-called normal types must go under a cloud. The nature of epilepsy is an open question and concepts of it are changing rapidly. Perhaps the so-called epileptic personality is intimately related to it and perhaps not at all.¹ A few systematic studies are now indicating that the notion of each of these types of disease being preceded by its corresponding form of personality may be highly fallacious.²

Introversion and Extraversion. Much thinking about personality types normal and abnormal has centered around these two concepts. As terms they are old, and the concepts of personality indicated are not new; but for their use in abnormal psychology we are largely indebted to the efforts of

¹ The different forms of abnormality are more adequately presented in the chapters on the psychoses.

² Kasanin, J. and Rosen, Z. A., "Clinical variables in schizoid personalities," *Arch. Neur. & Psychiat.*, 1933, 30, 538-566.

C. G. Jung,¹ a distinguished psychiatrist in Switzerland, and his followers.

The definition of these terms is not easy because of the prevailing vagueness concerning their exact meaning. In general they are used to designate the degree to which one is preoccupied with external objects and events or with one's own thoughts and feelings and attitudes. *Introversion* designates an habitual or predominant interest in the things within, in the individual's own thoughts and feelings and attitudes. *Extraversion* thus designates an habitual or predominant interest in that which is commonly classified as external, in external objects and events. It is sometimes said that the introvert finds his greater satisfaction in that which lies within, and the extravert finds his satisfactions in that which lies without.

Any careful examination of these definitions from the point of view of psychology or from that of philosophy will soon reveal defects and inadequacies. And all attempts at measurement of these differences have proved equally unsatisfactory because they have demonstrated that no two measurements of extraversion and introversion are measuring the same attitude or interests or sets of functions. And yet, in spite of the confusion of thinking about these terms and the failure of agreement in the attempts to measure the differences, use of the terms persists and most psychologists seem to agree that they do designate individual differences which appear to exist in some form. Certainly the words are in constant use.

The relationship of these concepts to the interpretation of abnormal phenomena will appear from time to time as the different forms of abnormality are presented. Ordinarily it is assumed, especially by psychopathologists, that extremes of either introversion or extraversion are abnormal; but it may

¹ Jung, C. G., *Psychological Types*. New York, Harcourt Brace, 1923. Pp. 654. For further discussion and reviews of the literature see also the following: Conklin, Edmund S., "The definition of introversion, extraversion and allied concepts," *J. Abn. & Soc. Psychol.*, 1923, 17, 367-382. Guilford, J. P., "Extraversion and Introversion," *Psychol. Bull.*, 1930, 27, 96-107.

be that in the abnormal instances there is more to be accounted for than the mere extremity of the introversion or extraversion. In normal affairs one can voluntarily shift from a fairly extreme degree of one to the other, but in the pathological cases this seems not to be true.

There is also the notion that these terms introversion and extraversion designate type differences, and that those forms of abnormality in which these traits are pronounced characteristics are deviations or morbid conditions developing in individuals who are of that normal extravert or introvert type. But, as all students of general psychology and of individual differences know very well, the concept of types is a dangerous one. Careful investigation ordinarily reveals not bi-modal distributions but normal distributions of differences. This appears to be true of these differences in extraversion and introversion. What has been observed and designated by these terms is but characteristic of persons who in these features would fall in the extreme portions of a normal distribution, in the upper and lower quartiles perhaps. For the many possible gradations in between, terms have not been coined except for the single term *ambiversion* which is now commonly used to designate the middle range of the distribution, those individuals who manifest much the same degree of both introverted and extraverted behavior traits.

SELECTED REFERENCES

- Campbell, C. M., Langfield, H. S., and others, *Problems of Personality: Studies Presented to Morton Prince*. New York, Harcourt, 1925. Pp. 434.
- Cannon, W. B., *Bodily Changes in Pain, Hunger, Fear and Rage* (2nd ed.). New York, Appleton, 1929. Pp. 404.
- Child, C. N. and others, *The Unconscious*. New York, Crofts, 1928. Pp. 260.
- Freud, Sigmund, *Beyond the Pleasure Principle*. New York, Boni and Liveright, 1922. Pp. 90.
- Freud, Sigmund, *The Ego and the Id*. London, Hogarth, 1927. Pp. 88.

- Healy, Wm., Bronner, A. F., and Bowers, A. M., *The Structure and Meaning of Psychoanalysis*. New York, Knopf, 1930. Pp. xx, 482, xxiv.
- Jones, Ernest, *Papers on Psychoanalysis*. (3rd ed.) New York, Wood, 1923. Pp. 731.
- Jung, C. G., *Psychological Types*. New York, Harcourt, 1923. Pp. 654.
- Kretschmer, E., *Physique and Character*. New York, Harcourt, 1925. Pp. 266.
- MacCurdy, J. T., *Problems in Dynamic Psychology*. New York, Macmillan, 1922. Pp. 383.
- McDougall, Wm., *Outline of Abnormal Psychology*. New York, Scribner, 1926. Chaps. I and II.
- Münsterberg, Ribot, Jastrow, Janet, Hart and Prince, *Subconscious Phenomena*. Boston, Badger, 1910. Pp. 141.
- Northridge, W. L., *Modern Theories of the Unconscious*. New York, Dutton, 1924. Pp. 194.
- Rosanoff, A. J., "A theory of personality based mainly on psychiatric experience." *Psychol. Bull.*, 1920, 17, 281-299.
- Taylor, W. S. (Ed.), *Readings in Abnormal Psychology and Mental Hygiene*. New York, Appleton, 1926. Chaps. I, V, XVII.
- White, W. A., *Mechanisms of Character Formation*. New York, Macmillan, 1916. Pp. 342.
- Woodworth, R. S., *Adjustment and Mastery*. Baltimore, Williams and Wilkins, 1933. Pp. 137.

CHAPTER II

PSYCHOGENIC INTERPRETATIVE CONCEPTS

PHYSIOGENIC EXPLANATIONS, PSYCHOGENIC EXPLANATIONS, PHYSIOGENIC AND PSYCHOGENIC INTERPRETATIONS COMBINED, SPECIFIC MALADJUSTMENT CONCEPTS (COMPLEX, MORBID COMPLEX, DRIVES, DEFENSE MECHANISMS, COMPENSATION, FIXATION, SUBLIMATION, RATIONALIZATION, DISPLACEMENT, CONDENSATION, OVER-DETERMINATION, PROJECTION, INTROJECTION, REGRESSION, SYMBOLIZATION, FANTASY THINKING, REALITY THINKING, TRANSFERENCE).

In considering any form of behavior abnormality, it is necessary always to keep in mind the possibility of using either one of two schemes of interpretation which are basically in opposition to each other. A given abnormality may for example be explained in terms of degenerative alteration of brain structure, or it may be explained in terms of wrong habits of interpretation and the ensuing emotional arousal. The former would be an example of what is known as physiogenic interpretation; the latter would be an instance of psychogenic interpretation. Both of these must be considered at greater length.¹

Physiogenic Explanations. There are many forms of abnormality of human behavior which can be explained with certainty by reference to a degeneration of nerve tissue. It may not be possible to make a complete demonstration of this degeneration during the life of the patient, although sometimes even this can be done. Encephalograms made by X-ray photography frequently portray the presence of cortical degen-

¹ For an exceptionally useful presentation of the various positions see Bentley, M., and Cowdrey, E. V., *The Problem of Mental Disorder*. New York, McGraw-Hill, 1934. Section II.

eration or of a brain tumor. Often, however, there are degenerative changes which cannot be demonstrated except in post-mortem examination. But the student of abnormal phenomena should learn early that there are many abnormalities, sometimes very gross, for which no changes of brain structure can be discovered even in post-mortem. About these there is no little difference of opinion. Because of the absence of demonstrable organic alteration there are those who contend that a physiogenic interpretation cannot be utilized. Others contend that the absence of demonstration does not necessarily prove the absence of structure change. They say that such a change may exist, but that it exists in a form which is beyond the range of present methods of discovery.

In addition to brain lesions, those who prefer to think in physiogenic terms find many sources of behavior abnormality outside of the brain. Alterations in the structure and functioning of one or more of the ductless glands of the body and even more obscure bio-chemical changes are looked upon as causes; and, when such causes are not immediately demonstrable, theories are constructed in terms of the probable existence of them. But, at the same time, there are students of psychopathology who contend that these glandular and biochemical changes are not causes but consequences. Obviously those who prefer to think of these physical conditions as consequences rather than causes also prefer to think in terms of psychogenic rather than physiogenic explanations.

Psychogenic Explanations. An interpretation of an abnormality of behavior in terms of maladjustment¹ would be a psychogenic interpretation. When an abnormality is interpreted in terms of its psychogenesis, the assumption is ordinarily implied that the cause of the trouble is basically, if not entirely, attributable to maladjustment, to the appearance of conflicting and unsuitable responses, and especially to the course of cognitive and emotional experiences appearing as a

¹ For definition see preceding chapter.

consequence of this maladjustment. A single maladjustment may be recognized and immediately corrected; but, where it is not corrected, it may be repeated, become a habit, and be the stimulus for still more inadequate and unsuitable and conflicting reactions.

Psychogenic thinking assumes that the body is structurally sound, but that it is not operating properly. It may recognize the presence of physical abnormalities but only as consequences. A badly disturbed digestion, for example, might be looked upon as the consequence of the recurrent and excessive arousal of fear, which in turn is thought of as the consequence of the habits established by the maladjustment. Psychogenic thinking does not, however, ignore the possibility of structural defects being the cause of maladjustment. Blindness, deafness, loss of a limb, knowledge of the possession of a weak heart, and the like, may so affect the concept of the self and in turn the interpretation of life situations with their attendant emotions as to make them the actual center around which the psychogenesis develops. Such structural defects are not thus directly the cause of abnormalities of behavior, as a brain tumor or cortical degeneration for example, but are indirect causes operating through a psychogenesis.

Psychogenesis and Physiogenesis Associated. Very often it will be found impossible to interpret given examples of behavior abnormality in terms exclusively of either the psychogenic point of view or the physiogenic point of view. Both seem to be involved. It is quite possible for a psychogenically determined disturbance to be the cause of physiological disturbances which are in turn causes of behavior abnormality. And the converse of that combination is equally true. Organically caused disturbances may bring about situations to which maladjustments are made and then the whole train of a psychogenesis is started. A psychogenically determined abnormality may readily develop around an organically determined paralysis for example. In the study of psychopathology these combinations

will be met quite frequently; in fact, it may be that such combinations are of more frequent occurrence than are abnormalities of behavior which can be attributed to purely psychogenic or physiogenic causation. It is for this reason that, for the practice of psychiatry, the art of treatment of nervous and mental diseases, medical training is necessary as well as training in several fields of psychology.

Specific Maladjustment Concepts. Psychogenic studies have revealed a number of behavior patterns, or forms of reaction, which occur repeatedly. These have been given special names which are now in common use. Not infrequently there is a difference of opinion as to the proper interpretation of the particular reaction pattern designated, but of the existence of such reactions there is little question. Such differences of interpretation will be indicated where necessary as each is presented.

The concept of something called a complex frequently appears. The complex is ordinarily looked upon as a determiner of both cognitive and emotional reactions which is itself not in consciousness nor accompanied by consciousness. The psychoanalysts, of course, assert that the complex is to be thought of as located in the unconscious portion of the psyche, and to be essentially so disagreeable to the ego-ideal that it is kept in repression by the super-ego. Definitions are numerous and somewhat confusing. The following by Frink is widely used and is fairly representative:

"a system of connected ideas, having a strong emotional tone and displaying a tendency to produce or influence conscious thought and action in a definite and predestined direction, is called a complex."¹

Definitions as given ordinarily stress more explicitly than does this of Frink that the functioning of the system of affectively toned ideas is unconscious.² Here it appears more by implica-

¹ "What is a complex?" *J. Amer. Med. Assoc.*, 1914, 62, 897-900.

² See for example W. A. White's *Mechanisms of Character Formation*, pp. 38 to 39, and A. A. Brill's *Psychoanalysis* (3rd ed.) pp. 203 and 451.

tion in the statement about its producing and influencing the course of thought and action.

The student who has been trained in general psychology will find much in such definitions which does not please him. It is difficult for him to think of ideas and emotions as being unconscious; but it is apparently not so difficult for those who have been trained only in psychoanalytic ways of thinking. They speak constantly and freely of unconscious thinking and feeling.

But, strange as these psychoanalytic ways may at first appear, the difficulty may lie more in the definition of the concept than in the behavior which has led to the assumption of that which they term a complex. The student of general psychology will promptly recall that chapters on memory usually present the fact that our experiences tend to form groups as they establish those impressions or traces which make subsequent recall possible. Our experiences with English literature may, for example, be highly scattered and yet they become associated into a whole which is far less strongly associated with other constellations of experience effects. Interspersed with the school experiences in English and physics and the rest there may have been many experiences with a certain girl for whom as a consequence a love sentiment was established. The girl experiences, like the literature and the physics and the others fall into their own constellation. And each constellation has its own peculiar emotional accompaniment, which appears whenever the constellation is stimulated into the production of a conscious memory experience: love for the girl, delight in the literature, and detestation (perhaps) for the physics.

It will also be recalled that conscious attitudes and purposes rapidly establish determining tendencies and continue to function thus quite apart from consciousness. Sometimes we are aware that our responses to given situations are influenced by these remnants of former experience but frequently we are not.

With these two items from general psychology in mind it is possible to re-express the definition of the complex in language that may be more acceptable. The writer prefers to think of it as a constellation of determining tendencies, established by a series of emotional experiences with some object or some concept, which may affect any and all kinds of human response.

Difficulty with this definition may arise at once because of its apparent similarity to the definition of a sentiment as presented by McDougall. Concerning this problem there has been no little discussion.¹ But the definition as given above is more inclusive than is that ordinarily presented for a sentiment. The sentiment is a pattern governing the instinct-emotion reactions which are aroused while a complex may determine the meaning that accrues in perceptions, in conceptions, the course of thinking, valuations, action tendencies — every kind of response in fact, including emotional reactions, of which a human being is capable. A complex might conceivably be related to two or more sentiments. An inferiority complex for example would certainly involve the self-regarding sentiment and probably one or more others. The complex is therefore more inclusive in the possible range of its organization and influence than is the sentiment.

So considered it must be obvious that complexes are a matter of the everyday experience of everybody and not necessarily a matter for the specialist in abnormal psychology. Many so accept the term. But there are those who contend that the term complex should be reserved for the designation of those constellations of determining tendencies that are so disturbing as to be properly classifiable as abnormal. Putting it yet another way, it would be that the term complex should be used only when describing that which lies in the background of behavior that is recognized to be abnormal. For all this argu-

¹ Symposium on the relations of complex and sentiment. *Brit. J. Psychol.*, 1922, 13, 107-148.

ment, however, the author believes there is little justification. The term complex apparently designates a concept which appears to be a fairly close approximation to what is taking place beyond that which is immediately observable in human behavior. As such, it can be used in the interpretation of abnormal behavior and also of normal behavior. The terms sensation and perception and idea are used without quarrelling over whether or not they are to designate something normal or something abnormal. It is conceivable that behavior might be extraordinarily abnormal and be produced by a complex which was functioning quite normally.

Morbid complexes are so called either because of the nature of their content or because of the way in which they function. When a complex is heavily loaded with the influences from thoughts of incapacity, social incompetence, social undesirability and so on, then, even though functioning quite normally, it would stir inferiority feelings and accompanying reactions so frequently and so intensely as to be a serious menace to the actual achievement and efficiency of the individual so disturbed. In such an instance the behavior is abnormal because of the improper content of the complex. It can be properly termed a morbid complex. There seem also to be instances where, although without sufficiently irregular or inappropriate content, the complex is quite beyond the possibility of voluntary recall, even in part. There is thus amnesia for the content of the complex. Such is not characteristic of behavior related to a complex which is functioning normally. The consequence may be marked disturbances of behavior. There is ample evidence that in such cases the complex continues to respond to stimulation, but it cannot be voluntarily brought out directly into that form of response commonly designated as conscious. Suppose for example that a person who was much interested in fire-arms and knew much about them, who obviously had a fire-arms complex, should be discovered to have lost all interest in the subject and be unable to recall anything he had ever known

about them. And suppose further that this person with the loss of voluntary recall developed a curious and inconsistent fear for all fire-arms. Then would one suspect that the fire-arms complex was functioning abnormally. Such would also be classed as a morbid complex, because of its abnormal mode of functioning. There is, also, the further possibility that a complex might be morbid both in content and in mode of functioning, as they apparently often are.

The course of the *formation of a complex* appears to be about the same both for the normal and the morbid. Material for it comes through the cognitive processes, perception and thinking. The thinking must be largely in the form of imagination. Some reasoning no doubt enters in, but largely in the incomplete form of fantasy thinking or day-dreaming. It is commonly supposed that fantasy thinking contributes largely to the content of complexes, especially of morbid complexes. Impulses to actions which are in conflict with the ego-ideal are blocked and to a greater or lesser extent are repressed. But the impulses frequently do not submit and die out. They reach consciousness in the less harmful form of day-dreaming, fantasy thinking, and through the day-dreaming more content is contributed to the complex. There is often much evidence, especially in the development of morbid complexes, of a kind of thinking which is better described as meditative. It is scarcely of the nature of fantasy thinking. It is more of the nature of a morbidly introspective meditation upon one's own faults or troubles or deficiencies. Obviously the fantasy thinking and meditation supply meaning for subsequent perceptions, and, as a consequence, the world gradually comes to be perceived in a distorted manner. False ideas and false perceptions may contribute quite as much to a complex as those which are nearer the truth.

Many psychoanalysts believe that the formation of many complexes is determined intrinsically, that every individual inherits tendencies which unconsciously govern and force the

development of some of our complexes. Where so determined they consider it possible for a complex to develop entirely within the unconscious. And, in the course of such unconscious development, they posit the influence of much fantasy thinking which they believe is also unconscious. The best examples of this are the Œdipus and the Electra complexes (presented in detail below) although there may be others.

The mistake should not be made of assuming that all impulses which are in conflict with our ideals end in the formation of complexes. Far from it. Many of them gradually subside and eventually disappear entirely. Others which we do not like, are a bit ashamed of, linger with us. We might like to forget but cannot so easily do so. We protect ourselves from such disagreeable memories by active preoccupation with other things. In the course of time, much of the disagreeableness is removed by the changes in interpretation that come through accumulation of experience, by the achievement of greater wisdom. With the passage of time we come to see things in a different light. Old experiences which once troubled us and which we even tried to forget take on a new meaning and eventually become but harmless episodes, if not actually amusing events, of our more youthful past.

Psychoanalytic studies present morbid complexes as always developing about certain *drives* or instincts or basic motivations of life. These may be itemized as follows: 1, the seeking for sexual satisfaction; 2, the urge or drive for the maintenance of a feeling of security, of peace or comfort; 3, the desire for power or superiority. The literature on abnormal phenomena often refers to these as the sex instinct, the instinct for self-preservation, and the instinct for or the will to power; but it is undoubtedly better to think of them not with reference to their past, as the word instinct implies, but with reference to their dynamic trend. It is also wise to avoid the term instinct because it has been so badly abused. It has been further argued by some that the sex drive is basic and that the others may be

resolved into it. Perhaps by a species of rather exiguous reasoning such a resolution can be achieved, but the evidence therefor is not clearly present in the case histories. The war-neurosis cases seem to have centered about fear rather than about sex. If fear is in the last analysis a form of sex, it is so only in a remote and theoretical fashion.

The drive for security seems to be more than merely a seeking for continued existence, for there is evidence in the case histories of an urge toward the continuation not only of life itself but of life in a condition or state of comfort or security. More and more emphasis is being placed upon this drive for security because case studies are constantly revealing the large place which the consciousness of insecurity plays in the development of many forms of abnormality in behavior. Most of us are at peace with ourselves, are able to live more effectively, are far less likely to act impulsively and erratically, when our situation in life as we perceive it is one that promises the continuation of a comfortable round of existence for ourselves and our loved ones. But let anything break into that world in a manner which promises insecurity, the loss of employment or the consciousness of guilt which must at all hazards be concealed, then there is discomfort and struggle and the disturbing influence of fear. Whatever threatens the continuation of a consciousness of security stirs fear intensely.

The desire for power or superiority will be recognized at once as that urge or motivation the checking of which results in the feeling of inferiority. Complexes which arouse this feeling of inferiority too easily and too intensively may be and usually are termed inferiority complexes. It is a fair assumption that many notions of inferiority have gone into their formation. And it is also fair to assume that there may be a great variety of complexes coming under this general classification of inferiority.

The recognition of the inferiority complex and the development of its place in psychogenetic theory is the great work of

Alfred Adler.¹ He has pointed out many of the stimuli which stir the feeling of inferiority, such as diminutive stature, poor health, defective organs or limbs, etc., because they appear to the individual as insuperable obstacles to the power or superiority desired. Some writers are now mentioning a desire for recognition or achievement. Certain as it is that this is a common desire of mankind, it need not be considered as a separate drive. The urge to recognition is but a phase of the more general drive for power or superiority. Attempts have been made to reduce this also to sexuality. And it must be admitted that sexual incapacity, actual or imagined, is a common cause for inferiority complexes. It would seem more sensible, for the sake of clarity of thinking, if for nothing more, to keep this kind of sex disturbance separate from those which are due to unsatisfied sex desires. It is not an unsatisfied sex desire but an unsatisfied desire for power or wholeness stirred by the recognition of sexual incapacity. The inferiority complexes are aroused not only by the recognition of handicaps due to physical defects but also to the recognition of social or intellectual differences, and in these forms are a very prevalent source of behavior disturbances.

All complexes should thus fall into one of these three groups: sex complexes, fear complexes, inferiority complexes. As there are three fundamental human drives, so there would be three kinds or groups of complexes. While such a classification is convenient, it must not be accepted as final. Complexes can easily be discovered which seem to overlap two or more of these classes, probably because the circumstances giving rise to them were such as to block more than one of the fundamental drives. Some day it may be possible on some such basis as this to distinguish between simple and complex complexes.

Defense mechanism is a term now frequently applied to be-

¹ Adler, Alfred, *The Neurotic Constitution*. New York, Moffat Yard, 1917. Pp. 436; — *Study of Organ Inferiority and its Psychological Compensation*. New York, Nerv. & Ment. Dis. Pub., 1917. Pp. 86; — *The Practice and Theory of Individual Psychology*. London, Kegan Paul, 1924. Pp. 352.

havior which appears to be well designed for the protection of the personal feelings of the individual observed. Ordinarily it is assumed that the basic motivation is the activity of a morbid complex. All efforts to inhibit, to control, or to repress, are in danger of being inadequate and the defense mechanism appears as an aid in keeping the disagreeable out of consciousness.

In the case histories there often appears evidence of excessively intense devotion to some cause or there is some trait conspicuous for its peculiarity. Upon further investigation such traits are found to serve as protections against the coming to consciousness of desires or impulses which would be most disagreeable, most incompatible with the ideals of the individual. Examples are reported of patients with an intense devotion to the cause of antivivisection whose devotion upon further examination proved to be but a defense mechanism which aided the ideals, the ordinary repressing or inhibiting mechanisms, to keep in check an unusually strong impulse to cruelty. This cruelty motive upon examination was found to be a complex dating from childhood where the core or drive around which it developed was the urge to power or superiority.

It is well known that many psychoneurotics, not all, shun the medical profession and flock to the many varieties of faith healers or mind curists. If they went to a regular medical practitioner he would undoubtedly inquire into matters which the patients prefer not to think of, which if permitted to come to consciousness would be highly disagreeable. Social influences, instead of assisting the individual to keep the disagreeable in check, act quite in the opposite direction by urging the employment of a competent physician; so the patient becomes enthusiastically, intensely, involved in the activities of any one of the many non-medical cults which claim to cure by more or less supernatural means. This devotion serves as a defensive mechanism. It serves as an aid to keep the disagreeable from coming to consciousness. It seems better to confine the meaning of the term defense mechanism to this usage, although the

student will often find it confused in the literature of psychopathology with another mechanism known as that of compensation.

When the term *compensation* or *compensatory mechanism* appears, it now ordinarily designates some peculiarity of thought or habit which serves to compensate for some defect. This defect, it must be carefully observed, may be either actual or imaginary. But, whether the disturbing factor be actual or imaginary to the observer, its meaning to the person involved is that of a defect which is a handicap to personal achievement. This recognition is of course disagreeable. If the effort in consequence were that of seeking to conceal the defect and to keep it out of the personal consciousness, then the ensuing activity would be designated as a defense mechanism. But where the defect actual or imaginary is accepted frankly by the possessor without any attempt to repress or conceal and then the possessor proceeds to the development of manners or skills or knowledge which will aid to the achievement of social adjustment, success in life, and personal happiness, then is the consequence termed a compensation.

Nice distinctions between compensation and defense are frequently quite difficult of achievement. As the various forms of abnormality are reviewed, and especially when specific cases are under consideration, it will be often impossible to determine to one's entire satisfaction whether a given process is to be classified as compensation or as defense. Doubtless this difficulty of interpretation in particular cases is in large part to blame for much of the confusion which still prevails in the literature in the usage of these two terms.

Many behavior problem cases manifest what is now commonly termed *fixation*. The definition of fixation is not easy because it is used both by those who accept and those who reject psychoanalytic ways of thinking; but, as it came out of psychoanalysis, that mode of thinking in connection with it may wisely be considered first.

Understanding of psychoanalytic thinking about fixation rests first of all upon an understanding of their concept of *libido*. This is variously defined, reflecting much difference of thinking; but the gist of the definitions indicates the recognition of a stream of energy or force or affect which may flow through, or become attached to and thereby invigorate, any innate or acquired behavior pattern. Some have identified libido with the sex urge, others have identified it with the will-to-live, still others with pleasure or satisfaction; but, whatever the definition, interpretative stress has always been placed upon its genetic relationships and especially upon its manifestation in the various developmental stages of love.

It is claimed by the psychoanalysts that the first form of the love life is the mere seeking of pleasure or comfort through the simpler bodily functions — the comfort brought about by being warm, dry, well fed, etc. Such pleasure or satisfaction is said to be autoerotic. When the distinction between self and not self is achieved there is the first step upward. The libido is gradually shifted from the autoerotic to the satisfactions of the self. Now as the child's love is of itself it is referred to as Narcissistic (sometimes spelled Narcistic) from the Greek story of the boy who fell in love with his own image. Following the Narcissistic stage there is the first period of affective behavior with reference to other individuals, say roughly from about three or four to six or seven years of age. This concerns the father and mother especially but applies also to brothers and sisters and playmates. Here again another and larger series of behavior patterns develop and again the libido shifts normally from the older to the newer. It is further claimed that the little girl has a greater amount of libido shifted to the behavior patterns concerning her father and the little boy likewise to those related to the mother. Herein lies the first hint of the heterosexuality to be fully developed after puberty. In other words, the little girl has a greater affection for the father and the little boy for the mother. Of course every one can at

once think of exceptions, but it is the general scheme of development which is of importance here. From the years of six or seven to puberty there is thought to be a period of sexual latency in which intellectual or cognitive development is primary. After puberty the libido "tends to swing outward," as the saying is, which of course means that patterns of affective behavior with reference to other people become increasingly active and that the libido shifts to them. It is further supposed that in this "shift outward" the libido first attaches itself to patterns which concern another of the same sex, hence the crushes and intense intimacies and deep friendships of adolescence, a brief period of what might be called homosexuality. This is normally followed by heterosexuality, the love of one of the opposite sex. This is normally not the father or the mother, although the psychoanalysts claim that it is often an individual who in some way takes the place of, is a surrogate for, the father or the mother.

The upward shifting of the libido from channel to channel in the direction of that which is socially more acceptable is termed *sublimation*. While heterosexual love is ordinarily presented as the highest stage of sex-love development, it is also generally accepted that there may be a further sublimation of this libido in cases of sex-love frustration, of enforced celibacy. The libido is in such instances thought of as being shifted to the activities of philanthropic endeavors, social welfare work, religious activities, and so on. But it should never be assumed that sublimation is complete. There is always some libido flowing through each of the older channels: some libido normally remains fixated at each of the lower levels. Thus every healthy heterosexualized adult still retains the possibilities of pleasure in eating and in the other bodily functions, of some self love, of some parental love, and of some affection for persons of the same sex.

But, when the amount of libido flowing through or attached to one of the older stages is excessive and disturbing to the

further development and adjustment of the individual, then there is said to be a fixation of the libido. If this fixation takes place in the first stage of development, then the so fixated individual is said to be autoerotic; if it takes place at the Narcissistic stage, the individual is said to be Narcissistic; if at the early stage of heterosexuality, when the father and mother are the outstanding characters, then the individual is said to suffer a mother fixation or a father fixation, as the case may be; if the fixation takes place at that first swing of the libido outward, the stage of great affection for individuals of the same sex, then the person is said to be a homosexual.

One does not need to seek far for illustrations of many of these forms of fixation. While the autoerotic and the Narcissistic may be less frequent, and fortunately so, father and mother fixations are to be found in any community. The girl who never marries because of the inordinate devotion to her father, or who, if she marries at all, does so late in life, and then to a person who treats her as her father did and who demands of her a similar care, is well known and usually admired in her community for her devoted life, although the admirers usually have some reservations to their admiration. Cases of men who never marry, or do so unhappily because of the devotion to their mothers, are almost equally well known. Some parents there are who make the mistake of trying to establish such fixations. Of fixations at the stage of homosexuality little beyond their recognition is necessary here.¹ Adolescent "crushes" which become persistent in the form of devoted companionship through the years are probably the best examples of this form of fixation. The ordinary crush, which is of short duration, may be thought of as merely a somewhat more acute manifestation of the homosexual stage of development. If all homosexual perversions can be wisely thought of as fixations of development at a homosexual stage is still a matter of debate. There is also the possibility that many of them are born freaks. But

¹ For a more detailed discussion see chapter X.

of that which can be safely classified as homosexual fixation it is certain that there are many forms and complications.

Those who reject psychoanalytic thinking consider the libido concept an unnecessary importation, and all this business of upward displacement and fixation of libido flow as useless lumber. They do, however, recognize the fact of retention of childish habits: and, when the non-psychoanalyst uses the term fixation, he means by it nothing more than the carry over into adolescence or maturity of infantile or childish ways of functioning which should have been abandoned and superceded by more appropriate ways of reacting. That there are instances of fixation and retention of highly self-centered (Narcissistic) habits, of habits of excessive devotion to a parent, and of growth-distorting devotion to one of the same sex is not questioned. They are frequently encountered. It is merely the scheme of interpretation which is questioned.

Behind a fixation there is ordinarily a complex. Two of these are famous; those which lie behind mother and father fixations. They are called the *Œdipus* and the *Electra* complexes. Psychoanalytic studies have presented complexes concerned with a love for the parent of the opposite sex and a desire to do away with, to take the place of, the parent of the same sex. These are supposed to have led to the particular parental fixation. The *Œdipus* complex, causing mother fixation in the boy, and the *Electra* complex, causing father fixation in the girl, are so named because of the belief that they are in large part racially determined, and because of the belief that such racial traits are the motivation of the myths which mankind has produced. The story of *Œdipus*, which is the tale of a man who slew his father and married his own mother, is supposed to be the racial expression in fantasy terms of the racially repressed desire for marital relations with the parent of the opposite sex. The story of *Electra* is a rather poor counterpart of the story of *Œdipus*, but has been made to serve the purpose.¹ These com-

¹ For useful presentations of these stories as the psychoanalysts use them see W. A. White's *Mechanisms of Character Formation*, chapter VII.

plexes are supposed to appear in the development of every individual, normal and abnormal. They are supposed to be racially determined developments within the unconscious. Where fixations develop, something has brought about a morbid functioning of one or other of these complexes; but normally the Oedipus and the Electra complexes subside and gradually disappear as pubescence is reached. Remnants of their influence enter into the content of the super-ego as long retained influences of the habits and judgments and standards of the parents.

Another concept with which every student should be familiar is that of *rationalization*. Patients and behavior problem cases upon questioning often give very plausible but misleading explanations for any form of their conduct the examiner seeks to investigate. These explanations may, unless examined too closely, appear quite logical. They seem to satisfy the patient, especially if they satisfy the examiner. Some psychoanalysts have even gone so far as to assert that consciousness never says what it means, that the real meaning is to be found in the unconscious motivation and that because the real meaning is unconscious the individual has no alternative but to develop an explanation which has the appearance of logic and of conformity to the obvious facts. This process of rationalization serves as an additional aid to concealment or repression. It satisfies the patient, which is but another way of saying that the patient is now in less danger of having the real truth come to consciousness; and if it satisfies the examiner, misleading him to leave the dangerous subject, then it all the more serves as a protective, concealing mechanism, an aid to repression. Differentiating between what is true in a person's story and what is rationalization is seldom easy. Skilled examiners know very well that there is always the possibility of being misled by a rationalization.

Displacement is another form of functional alteration claimed to be discoverable in many case histories. It, also, is a psychoanalytic concept and concerns the flow or attachment of that libido discussed above. Briefly defined, displacement

is the shifting of the libido, or affect, from the originally significant portion of a complex to some originally insignificant part of its ideational content, or even to some incidentally associated item. It must be differentiated carefully from both sublimation and transference. Sublimation, it will be recalled, was a shifting of the libido to reactions which were socially more acceptable. Strictly speaking sublimation might be thought of as a form of displacement, but the term displacement as used does not designate or include sublimation. Transference has a still different connotation and is discussed in detail below.

The student of general psychology will perceive at once that displacement and the concept of conditioning in learning have much in common. Apparently displacement is but an instance of feeling reaction becoming attached to another stimulus than that which was originally effective, a substitution of stimuli. But the psychoanalysts and most contemporary psychopathologists think in more dynamic terms. They think of the drives or urges within the personality as constantly pushing for expression. Around these complexes develop; and, if the central idea of a wish is so revolting to the ego-ideal that the whole wish is repressed, the drive or urge may be displaced and find expression through ideas or actions which originally had but a remote associative connection with the wish, if they originally had any association with it at all. Thus it will be found that central ideas in the conscious content of a dream may be really the means of conscious expression of the energy of a wish which had originally a very different purpose. Fixed ideas, compulsive acts, hysterical intrusions, delusions, and many other poorly controlled features of the experience of abnormal persons are frequently interpreted as the product of displaced energy, or affect, or libido.

When the history behind an obsession, or compulsion, or hysterical symptom of almost any variety has been entirely revealed, it often seems that the symptom under consideration,

especially if it be of an ideational nature, is not the expression even in a distorted manner of one idea from the complex but rather is the condensation of several. The obsession or the compulsion or the content of an hysterical seizure seems thus to be the combination of parts of the complex. This is technically known as *condensation*. While this concept is best known as one of the mechanisms used in psychoanalytic interpretation of dreams it must not be thought of as confined to the psychology of dreaming. It is now much used in the interpretation of abnormalities of behavior.

In the earlier psychoanalytic literature there was more emphasis than there seems today on what was termed *over-determination*. In tracing out peculiarities of behavior it was often found that not one simple repressed wish or complex was the motivation but that two or more combined. It was also pointed out that a simple wish from everyday life, when repressed, became allied with some one of the fundamental drives of life, such as sex, and that the resulting symptoms were due to this combination of forces. Thus arose the term *over-determination*, meaning determination by more than one complex or wish. The similarity, if not identity, between condensation and over-determination is at once obvious. Some authors are none too careful in the use of these terms and hence confuse the reader. It may be that eventually one or the other will be dropped, although there is a distinction which may make the retention of both terms desirable. Condensation might be used merely for the fusion of ideational factors; and over-determination where more than one of the fundamental drives of life are involved. Unless more than one is involved, the term over-determination is unnecessary because the existence of a complex itself implies that one, at least, of these basic drives is operative.

Another mechanism revealed by analysis is known as *projection*. This is the disowning of that which is in the patient's own mind and the attribution of it to external sources. It is

well known in the hallucinations of the psychotic. Processes actually aroused by something within the patient's organism are not accepted as of subjective origin but are attributed to some external source or agency. This attribution to some external agency, usually another person, of thoughts and feelings originating within the individual, is the mechanism designated by the term projection. Case histories constantly reveal tales of distress brought about by the misconduct of others, often members of the immediate family, when as a matter of fact the misconduct attributed to another is actually the repressed desire of the patient. Much too often hysterical women accuse totally innocent men of misconduct toward them, when the facts are that the alleged misconduct is but a projected expression of a poorly repressed sexual phantasy of their own.

There is a counterpart of projection known as *introjection*. This may be defined as the tendency to attribute to mental processes and states actually of objective origin and without personal significance a subjective origin or at least a personal significance. The best examples of this are doubtless to be found in the delusions of reference so familiar in the early stages of paranoia. In these stages the patient sees a personal meaning in much of what goes on about him. People who pass on the street, the mislaying of tools or kitchen utensils, anything, in fact, may be looked upon by such patients as having some personal application or reference. The involuntional melancholia is unable to accept the interpretation the physician offers that the depression is due to natural changes in the physiology of the body, but proceeds to relate the depression to that which is personal, to some misconduct or to conduct misunderstood.

Both projection and introjection, it will thus be seen, are at base a disturbance of the distinction gradually established in childhood between the self and the not-self. In projection that which should be treated as a part of the self is treated as not-self, while in introjection that which should be treated as not-

self is given a personal significance. Here again is a reason for the oft-reiterated statement that in so many ways the behavior of the abnormal mind is infantile. With recovery or a remission of symptoms and the gradual reestablishment of the distinction between self and not-self, the correct interpretation of these processes returns. Such patients, if confronted with their old delusions of reference or self-accusatory ideas, will respond that they did formerly make such mistakes in their interpretation, but add that they were then ill and could not distinguish properly. That variety of complex known as the inferiority complex will in the psychoneurotic and borderline cases be often found at the base of introjection. Such people are especially prone to think that every little action or comment has some ulterior personal significance. They are, in popular parlance, said to be unduly sensitive.

Another term often used in the interpretation of these case histories is *regression*. The infantile or childish appearance of the behavior of psychoneurotics and psychotics has already been mentioned and is often commented upon in the literature. Those who think in terms of the libido say that the circumstances of life have caused withdrawal of the libido from the newer or later behavior patterns and that as a consequence the libido swings back to the older. Where this occurs as the consequence of a complex the term regression in its abnormal sense may wisely be used. It should never be forgotten, however, that there is also a normal form of regression demonstrable in the play life of adults. While the cases of fixation discussed above also produce childish or infantile behavior in adults they must not be thought of as regressions. They are fixations, not regressions. The presence of a fixation may so complicate the behavior of an individual as to develop another complex, an inferiority complex, for example, which may in turn be the cause of a regression. In such a case there might be in the same patient a regression and a fixation, the one being the indirect consequence of the other.

Much has been made also of *symbolization*. This has been especially true of the psychology of dreams, but it appears also in the interpretations of case histories. The process of symbolization is a much more normal one than many suppose. Language is but a system of symbols, and within a language we have many euphemisms by which we avoid bringing the indelicate or the indecent into direct expression. Then, too, the many emblems and costumes and decorations and ritual forms of our religious and fraternal institutions are but a vast collection of symbols. Man has developed a curiously elaborate system of symbols by which he can speak or act in one way and mean something quite different. Much of the content of the symptoms of both the very abnormal and the borderline cases is found upon analysis to mean something quite different from that which is superficially apparent. The many mechanisms already discussed serve in most instances to conceal from consciousness something which is disagreeable and yet by some indirection to achieve an end. Hence it is not surprising that the content of the symptoms should often be referred to as symbolic.

Autistic or fantasy thinking is also said to be characteristic of the behavior of the abnormal mind. The fundamental principle of autistic thinking has been most happily defined by Wells¹ as follows: "Things are considered to be in the relations of identity, or of cause and effect, simply because they happen to be associated together in the mind." This is of course a childish and primitive way of thinking. Because a child is born in a house where a stork recently made a nest is no logical reason for thinking that the stork brought the child, but it is the autistic mode of thinking — the two things occurred together, therefore the one is the cause of the other. In the course of normal development such childish modes of thought are displaced by the development of rational or logical thought. The irrationalities of morbid minds, often so annoying to the nor-

¹ Wells, F. L., *Mental Adjustments* (New York, Appleton, 1917), p. 54.

mal, will frequently be found to be due to this autistic type of thinking. This may be a retention from childhood, the consequence of a fixation, or it may be a recrudescence of childish modes of thought in maturity as a consequence of the blocking by complexes and the tendency to regression. The course of thought of the primary dement is conspicuously of this autistic or fantasy variety and in varying degrees it will be found in most of the psychoneuroses, especially in their rationalizations. This makes argumentation with them peculiarly futile.

Fantasy thinking is not infrequently contrasted with *reality thinking*. While this term stirs protest in the minds of many because of its curious use of the word reality, it is, nevertheless, a term which has come into considerable use and so must be mentioned in such a list as this. Obviously reality thinking is the more nearly logical, fact-considering thinking of those of us who are commonly accepted as being normal. Thinking which tries to be logical, which tries to face the actualities of life no matter how disagreeable, which seeks to take future consequences as well as present pleasures into its consideration, is thinking which is designated as reality thinking.

Finally, attention should be called to the use of the term *transference*. In the course of the analysis and re-education of many abnormal cases a peculiarly intense affection develops in the patient for the person who is conducting the analysis or re-education, for the psychiatrist or psychoanalyst as the case may be. Those who assume a movable libido interpret this as due to the release by analysis of the repressed or fixated libido. It is, however, supposed to be but a stage in the cure because it so far is but a form of displacement. That libido or affect which had formerly been attached to certain ideational contents of a complex, the memory of the patient's own father, for instance, is now released by the procedure of the analysis and is displaced to the physician or examiner. In other words, the physician or examiner becomes a substitute or surrogate for the patient's father, or whatever happened to be formerly the affectively

toned core of the complex. Such a stage is incomplete and almost as undesirable as the original fixation. The analysis or re-education must be continued until this concentration of affection upon the physician or examiner subsides and the patient becomes normally adjusted to the world of human affairs. Expressed in terms of the libido it would be that the libido, which had been transferred to the physician, must be further transferred to other and socially more desirable activities of life. This further transfer of the libido may be fought by the patient, resulting in an open breach with the physician or examiner. Such a reaction must not, of course, be thought of as a completed readjustment to life. It also is but another stage, of a protective or repressive variety, in the progressive redistribution of the libido. If the student prefers to think in other than these terms of the libido, he may think of it in terms of the progressive substitution of one stimulus for another, which is likewise a process of education and may be utilized quite as well in the interpretation of what takes place in the course of the re-education.

SELECTED REFERENCES

- Adler, Alfred, *The Neurotic Constitution*. New York, Moffat Yard, 1917. Pp. 456.
- Adler, Alfred, *Study of Organ Inferiority and its Psychological Compensation*. New York, Nerv. & Ment. Dis. Pub., 1917. Pp. 86.
- Adler, Alfred, *The Practice and Theory of Individual Psychology*. London, Kegan Paul, 1924. Pp. 352.
- Conklin, Edmund S., "The definition of introversion, extroversion and allied concepts." *J. Abn. & Soc. Psychol.*, 1923, 17, 367-382.
- Frink, H. W., *Morbid Fears and Compulsions*. New York, Moffat Yard, 1918. Pp. 568.
- Healy, Wm., Bronner, A. F., and Bowers, A. M., *The Structure and Meaning of Psychoanalysis*. New York, Knopf, 1930. Pp. xx, 482, xxiv.
- Hitschmann, E., *Freud's Theories of the Neuroses*. New York, Nerv. & Ment. Dis. Pub., 1913. Pp. 154.

- Jelliffe, S. E., *The Technique of Psychoanalysis*. New York, Nerv. & Ment. Dis. Pub., 1918. Pp. 163.
- Jung, C. G., *Psychological Types*. New York, Harcourt, 1923. Pp. 654.
- McDougall, Wm., *Outline of Abnormal Psychology*. New York, Scribner, 1926. Chaps. XI, XV, XVI, XXV, XXVI, XXVII.
- Pfister, O. R., *The Psychoanalytic Method*. New York, Moffat Yard, 1917. Pp. 588.
- Rivers, W. H. R., *Instinct and the Unconscious*. London, Cambridge Univ. Press, 1920. Pp. 252.
- Tansley, A. G., *The New Psychology and its Relation to Life*. New York, Dodd, 1921. Pp. 283.
- Wells, F. L., *Mental Adjustments*. New York, Appleton, 1917. Pp. 331.
- White, W. A., *Mechanisms of Character Formation*. New York, Macmillan, 1916. Pp. 342.

CHAPTER III

SENSORY ABNORMALITIES, ILLUSIONS AND HALLUCINATIONS

CONGENITAL AND EARLY ADVENTITIOUS SENSORY DEFECTS, LATER ADVENTITIOUS SENSORY DEFECTS, AMPUTATION EFFECTS, SYNESTHESIA, DEFECTS OF CUTANEOUS-KINESTHETIC PERCEPTION, ILLUSIONS, ILLUSIONS VS. HALLUCINATIONS, HALLUCINATIONS, THEORY OF HALLUCINATION, PSEUDO-HALLUCINATION, CLASSIFICATION, HYPNAGOGIC HALLUCINATION, MEANING IN ILLUSION AND HALLUCINATION.

Most abnormalities of sensory function and the world's store of knowledge concerning them are of importance primarily to the medical practitioner and the research specialist. Errors in optic refraction and their correction as well as the many diseases of the eye are not in all their detail of immediate importance to the student of abnormal psychology, although it may be that they will become of increasing importance as our knowledge of them develops. The same may be said of hearing and the other senses.

The loss of experience from any particular sense organ, or its temporary total failure of function, is of marked significance. This is commonly referred to as an *anesthesia*, with some appropriate adjective designating the sense involved; although there are special terms available which designate the absence of sensation from particular sense organs.¹ Strictly speaking of course the term *anesthesia* would mean a complete absence of sensation, but such a strict use of the term is not common in the literature of abnormal psychology.

¹ When these are encountered the student should use a medical dictionary.

Congenital and Early Adventitious Sensory Defects. The complete lack of a particular sense from birth means a difference in the mental development and organization of the individual of a degree and nature difficult for the normal mind to comprehend. It means of course that the person so afflicted not only lacks all such sensory knowledge but also lacks all such sensory imagery. The person born blind lacks not only visual sensations but also visual imagery. Persons born deaf lack not only auditory sensations but also auditory imagery. The amount of imagery remaining in cases of early adventitious sensory defect appears to depend in large part upon the age at which the loss was suffered. If the loss occurred very early in life, the result is much like that in the congenitally defective, with the difference or advantage of some imagery remaining in the modality of the lost sense. Sometimes this is used; sometimes not at all. Sometimes it is permitted to decay; sometimes an energetic effort is made to retain it. If the loss occurs as late as twelve years of age or more, it is commonly assumed that the imaginal life continues to be more like that of the sensory normal.

Much of the experience of the normal mind is quite beyond the comprehension of those suffering a congenital or early adventitious sensory defect. This is well illustrated by the remark of the man born deaf who had never been able to understand what an orchestra might sound like, especially the process of tuning up. When he read that the tuning sounded like a "thousand stomach aches" then he said he had some idea of what that auditory experience must be. This illustrates how the sensorily defective are obliged to translate the terms of the normally sensed into terms of their own sense experience, for then and only then do the terms take on meaning.

The presence of a congenital sense defect, or of an early adventitious sensory defect, forces the individual so afflicted to attend to many details of sensory experience which the normal mind neglects. The blind are attentive to qualitative and in-

tensive changes in sounds, temperature changes of the air and movements of the air across the face and hands, many pressure sensations ordinarily neglected, kinesthetic changes of many kinds and combinations and degrees, and to odors usually avoided by the normally sensed. By attention to these other sensory details of daily experience meanings are developed which result in a knowledge of the environment which seems uncanny to the sighted person, who has never thought of the possible uses of those very sensory details which the blind use constantly. The alleged greater touch sensitivity of the hands and feet of the blind, the alleged sixth sense by which they become aware of doorways and trees and telegraph posts as they pass, and their other remarkable achievements are reducible to this forcing of attention upon details which the normal mind neglects. This means of course that while the meanings may be like those of the sighted person the actual furnishing of the mind of the congenitally blind is quite different. The same is true to a lesser degree of the congenitally deaf. They attend to facial movements especially and rely on meanings attached to the incidents of the visual world for significances aroused by audition in the minds of the normally sensed.

The peculiarities of the sensorily defective are far from being limited to the phenomena of sensation, imagery, perception and meaning. The influence which such defects have on the self concept, the consequent emotional reactions and the stimulation of compensatory developments, are of great or perhaps greater importance. Meanings may be acquired through other sense paths, but the social setting results in most significant peculiarities. Unfortunately these have been little studied by systematic methods. It is consequently possible to do little more than suggest what the probable nature of these peculiarities must be. The content of the self concept, the empirical ego, must be much affected. Set apart from childhood and educated in special schools, the struggle for education and a livelihood against almost insuperable obstacles is certain to

produce a self concept with a content differing notably from that of the normal individual. The emotional effect of this is certainly far-reaching. The peculiar restrictions and limitations upon their activities and the greater dependence upon others must result in an equally peculiar development of the instinct-emotion reaction patterns. Feelings of inferiority and of resentment are often observed by those who know the sensorily defective and associate much with them. The common comment that the blind are usually "not well balanced" and that the deaf have "bad tempers" and are suspicious, and the constant struggle in blind schools to get the blind children to go about courageously are all indicative of their peculiar emotional reactions. It must not be forgotten of course that there may be great individual differences among the sensorily defective as among so-called normal minds. The desire to be independent and as nearly normal as possible stimulates the development of compensations in the lives of the sensorily handicapped. Specialties and interests, which make for independence and which bring into life satisfactions and pleasures, are developed. These must always be watched for and taken into consideration in the attempt to understand the personality of any sensorily defective individual.¹

Where more than one sense is defective the situation is the more complicated. Deafness is so often complicated with the absence of function of the semi-circular canals and the otoliths that behavior consequent to the absence of the static sense is often thought to be common to all deaf persons. As vision and the kinesthetic senses so readily compensate for the lack of the static senses it is not a serious additional complication. The combination of blindness with anosmia would be a more serious handicap, especially in recognition of foods. But the combination of blindness and deafness is probably the most serious. Fortunately it is rare. Perhaps because of its rarity it has been

¹ A brilliant and illuminating presentation of the world and experiences of the blind will be found in Thomas D. Cutsforth's book entitled *The Blind in School and Society*. New York, Appleton, 1933. Pp. 263.

more carefully observed. The literature of Helen Keller, Laura Bridgman and Marie Heurtin reveal the ideational and to some extent the emotional peculiarities of the few so seriously handicapped. Incidentally, the three cases mentioned illustrate also very great differences in intellectual ability.¹ Sensory defect is often associated with feeble-mindedness and then the characteristics of that degree of feeble-mindedness must be included in the picture.

Later Adventitious Defects. Later acquired defects produce some peculiarities which are similar to those of the congenitally defective. Also some which are quite different. If the loss comes after the person has reached youth or maturity, then the mental effects are far less like those of the congenitally defective. The wealth of imagery acquired remains and the translation into its terms from the other senses is easy. The adjustment to the new mode of life requires increasing attention to those sensory details hitherto neglected which were discussed in the paragraphs on the congenitally defective. Many new perceptual adjustments must be made. Meanings must be attached to sensory experiences hitherto unnoticed. This takes time and may be especially disturbing and noticeable if the loss of the sense is relatively sudden. If the sensory loss is gradual then the new adjustments may take place gradually as the sense disappears. Partial defects produce certain recognizably peculiar attitudes. The hard of hearing try to appear normal and for a while succeed by normal perceptive processes. But as the sense becomes more and more defective there is much guessing, much assumption and even much pretending. The resultant misunderstandings lead to much misinformation. The greatest similarity to the congenitally defective occurs in the emotional reactions. The loss of a sense, sudden or gradual, produces a marked change in the self concept. The consciousness of wholeness and its emotional reactions changes to the

¹ See Harry, Gerard, *Man's Miracles*. New York, Doubleday, 1913. Pp. 197.

consciousness of being a defective with all its emotional complications. Notions of worthlessness, incapacity, and inferiority are common and persistent. These stir corresponding emotions. The individual's whole adjustment to life must be worked over. And if this becomes necessary in the prime of life it is often a profoundly disturbing experience. Compensations should be developed; but far too often the combined tact of all the friends of the afflicted fail to bring about such necessary adjustments. Here it cannot be over-emphasized that the mere physical care of the injured sense organs and nerves is but a small part of the care the patient requires if he is again to enjoy life and to be socially effective.

The foregoing discussion has been confined very largely to defects of vision and of hearing. Other sensory disturbances are common, but they are far less disturbing to the persons who suffer them. Losses of taste and smell, or their partial defects, are disturbing, but still one may go through life with anosmia without being very frequently discovered. There would be the absence of smell imagery, but smell imagery plays a relatively minor part in modern human life. The effects upon the self concept and the emotional reactions would be comparatively insignificant. The same could be said of the absence of taste, ageusia. Anesthesia in the cutaneous modalities happens not infrequently as the consequence of physical injuries. Functional disturbances of these and all the senses will be discussed later. Defects of the kinesthetic and the organic senses will also be occasionally found. Kinesthetic disturbances explain the peculiar gait of the tabetic patient. But kinesthetic and organic sensory defects are usually associated with other physical conditions to the effects of which they are likely to be rather incidental.

Amputation Effects. An especially interesting as well as pathetic loss of sensation and alteration of perception occurs as the consequence of the amputation of a limb. To the psychology of such, considerable attention has at times been given.

The loss of an arm or leg means the severing at some point of all the sensory nerves, but there continues in many cases a consciousness of the lost limb for periods varying up to several years. In some it appears to be in a fixed position, in other cases the position of the lost limb seems to change and in some the position can seem to be voluntarily changed. Usually the lost hand or foot is the part still felt, while the intermediary structures seem to disappear. The pressure of the artificial limb against the stump often assists in the production of the illusion. Stimulation of the severed nerves stimulates the appropriate sensory cortical areas, producing the familiar perception processes with reference to the limb. These are supplemented by movements of the muscles in the stump. The illusion of movement and of voluntary movement is supposed to be due to the continued functioning of the old cortical patterns and the activity of the muscles of the stump. As the old patterns still function the sensation produced by stimulation of the severed nerve trunk will be perceived with the former projection to an appropriate area on the now absent limb. This projection and the changes taking place as the re-education of the perceptive processes proceeds often attract attention and curiosity. In many cases the distance to which the stimulus is projected gradually shortens until eventually it receives the new and proper location on the stump. Then if an artificial limb is attached and worn the reverse process takes place until eventually the place of stimulus appears to be at the end of the artificial limb. While systematic studies of this phenomenon are few, it is clear that there are marked individual differences in the perceptive adjustments made. Some people adjust very quickly. Some never do so entirely and thus continue for years to have perceptions of the lost limb.

This is, however, far from being the whole story in the psychology of the amputated. This is little more than a curious phenomenon which may arouse the interest of the patient as well as those who discover its existence. The profoundly seri-

ous thing is the change in the self concept and in the emotional reactions which the patient undergoes in the course of the process of learning to live the amputated life. The disturbances of ambitions, the interference with professional life, which may be rendered difficult if not impossible, the social situation of appearing on crutches, the attitudes of others — all these contribute to the changes in the self concept and in turn to a complicated and disturbing change in emotional reaction patterns. The slowness with which many amputated persons readjust to life, or the occasional total failure to do so, must be attributed to these conceptual and emotional alterations.

Synesthesia. A curious defect or disturbance of the cognitive processes is known as synesthesia. As the name indicates, it has been considered as a combination or fusion of reactions to sensory stimuli, although there is now ample reason for thinking that the phenomenon may appear in thinking as well as in sensory-perceptual experience.

To the person who has never had anything approximating a synesthetic experience the descriptions by those who have had them are at first almost incredible. They tell for example of having colored hearing. Whenever a tone of a given pitch is aroused they experience also and prominently a certain color. Other pitches produce other colors. Letters of the alphabet, names for different objects and persons, human voices and so on are all reported as producing not only the appropriate auditory sensation but also a pronounced and characteristic experience of color. Experimental tests of these synesthetic reactions repeated after months or even years reveal practically no changes in the color associations. Almost any variety of sensory combination seems possible. One carefully studied case gave a wide range of gustatory-auditions. Whenever the subject heard the name Alfred uttered there was always the experience of the taste of corn-bread in milk; the name Bailey produced the taste of marshmallows; the word boy aroused the quality of gum-drops; doubt gave that of raw apples; and so

on through a very long list of items reported.¹ Another case gave a combination of pressure and cold. Cold spots on the limbs, but not all cold spots in a given area, aroused pressure sensations which seemed to come from the teeth or the side of the face (always the same side as that of the limb stimulated).² The list of varieties now known is very long. It includes, in addition to those already mentioned, pain-auditions, figured auditions, colored tastes, colored odors, colored pains, colored temperature sensations, auditory pains, personified letters and digits and days of the week, and many others.

The synesthetic associate when aroused has ordinarily the same localization as would a sensation aroused by direct stimulation in that modality; and the process is not reversible. Fatigue has the curious effect of sometimes reducing the synesthetic phenomenon and of sometimes increasing it. Mescal is known to bring out synesthetic phenomena where they did not appear in the normal state.

Reports of the frequency of occurrence of synesthetic persons vary. They range all the way from five to twenty-five per cent. For adults the figures ordinarily do not exceed fifteen per cent, and some think that the true frequency is very much less than this. The twenty-five per cent figure is for persons of adolescent years. This greater frequency among adolescents must mean that in many instances synesthesia disappears with the achievement of maturity.

Unfortunately most investigators have assumed that synesthesia was a sensory phenomenon only and have not investigated its functioning, if at all, in thinking. It would be surprising indeed if a highly synesthetic person should be synesthetic only when a certain sense modality was peripherally stimulated and not synesthetic when the same modality was activated in the imaginal form. Wheeler and Cutsforth clearly

¹ Pierce, A. H., "Gustatory audition, a hitherto undescribed variety of synesthesia," *Amer. J. Psychol.* 1907, 18, 341-352.

² Dallenbach, K. M., "Synaesthesia: pressure cold," *Amer. J. Psychol.*, 1926, 37, 571-577.

demonstrated that one markedly synesthetic case does think "synesthetically" as well as sense synesthetically.¹

Agreement on the interpretation of synesthesia has not yet been achieved. There have been those who thought of it as pathological (a), that colored hearing for example could be traced to a defect of the eye; but the pathological theory has never been popular and is now generally discarded. An anatomical theory (b) has achieved considerable recognition. It assumes that somewhere along the course of the sensory tracts involved there are unusual connections, anastomoses or tangling of the fibers, so that when one of the tracts is activated both respond. A physiological theory (c) has also been much used. This attributes the phenomenon to an unusual irradiation of the impulse from the properly aroused area to the synesthetic associate. It assumes that in the course of development of the nerve structures and patterns there has not been a normal differentiation of function. The fact that adolescents are more frequently synesthetic than are adults could be used to support this theory, because it would indicate that continued growth gradually eliminated the synesthesia, producing a more perfect differentiation in the functional patterns.² It has also been contended that some peculiarity of the learning experiences of childhood established the synesthesia. This is known as the association theory (d). It assumes nothing unusual about the nerve tracts or in the physiology. It assumes merely that, if a complete history of the individual's early experience could be made, there would be found the circumstances which set up such peculiar associations. The associational theory thus implies that the synesthetic phenomenon is of chance occurrence and is of no developmental or adaptive use, except where it may

¹ Wheeler, R. H. and Cutsforth, T. D., *The Synaesthesia of a Blind Subject with Comparative Data from an Asynesthetic Blind Subject*. Univ. of Oregon Pub. 1922, 1, No. 10. Pp. 104.

² Jaensch believes that his study of synesthesia in connection with eidetic imagery quite definitely supports this interpretation. See Jaensch, E. R., *Eidetic Imagery* (New York, Harcourt Brace, 1930). P. 113 et seq.

have been deliberately developed as an aid in memorizing. There is, finally, the cognitive or meaning theory (e) which presents synesthesia as a factor in meaning. Some persons develop meaning one way and some another. Some few persons have much material from some one other sense modality in their meaning patterns. For that reason they are distinctive and have therefore attracted attention and been classed as synesthetic cases. Where this is true, the synesthesia is obviously not something useless but is rather an essential factor in the meaning experiences.

The difficulty with these theories at present seems to lie in the impossibility of making any one theory fit all the forms of synesthesia presented. This may, however, be due to the way in which some of the cases have been studied and reported rather than to any imperfection or inadequacy in the construction of the theory. And it is also quite possible that there may be more than one kind of synesthesia. In which case, one of the theories offered might be the correct interpretation for one form and another theory correct for another form.

The notion that synesthesia is an intrinsically determined peculiarity and is transmissible from generation to generation is not without its supporters. There can be no doubt that it does occasionally appear in succeeding generations, although the form may be different, and in a manner which appears to exclude the possibility of training or any form of environmental influence in development. It is reported, for example, that second generation cases of synesthesia have been discovered to the person for the first time by some accident or experimental procedure in later adolescence or early maturity.¹ But judgments on this phase of the problem must be most tentatively made until much more evidence becomes available.²

¹ See Dallenbach case given above.

² Extensive bibliographies and reviews of the literature on synaesthesia will be found in the following: Mahling, F., "Das Problem der 'Audition colorée,'" *Arch. f. d. ges. Psychol.*, 1926, 57, 165-301. Wheeler, R. H., *The Synaesthesia of a Blind Subject*. Univ. of Oregon Pub. 1920, 1, No. 5. Pp. 61.

Defects of Cutaneous-kinesthetic Perception. The reader of abnormal psychology will sooner or later encounter the phenomenon described as *astereognosis* (sometimes *stereognosis*). Psychiatric texts are likely to treat it as though it were a defect of sensation, although to the psychologist it is obviously a perceptual disturbance as a consequence of some sensory defect. The "stereognostic sense" is the ability to tell what an object is by merely handling it. Occasionally this is defective or absent, sometimes on one side and not on the other. Careful examination reveals some lesion either cortical or subcortical which obliterates the sensory paths of one or more of the senses entering into the complex process of perceiving the nature of an object placed in the hand. In one case reported the cutaneous senses were intact but kinesthesia was absent.

Other disturbances of an allied nature appear as *allochiria* and *dyschiria*. In *allochiria* any given sensation is referred to a symmetrical spot on the opposite side of the body, is located contralaterally; in *dyschiria* there is an indefinite or generally wrong localization. This is not to be confused with referred pains where there is a regular reference of the pain from some organic condition to some surface area which may not superficially appear to be related to the organ affected. *Dyschiria* refers to the absurd mislocation of a cutaneous stimulation. Sometimes the term *dyschiria* is used as a general term for the designation of error or confusion as to the side stimulated, with other terms for the degrees of difficulty. It seems to be clear that there are at least three factors in or phases of the development of cutaneous sense perception: the acuity of the sense itself, the perception of location of the stimulus without reference to side, and the perception of the side stimulated. Any one of these is apparently subject to disturbance independently of the others.

Illusions. Abnormalities of perception are seldom well isolated in discussions of abnormal phenomena. They are often described as sensory defects, as has already been observed, and

they are often confused with delusions and also with hallucinations. The illusions of everyday life are a commonplace in all texts on general psychology as is their interpretation in terms of central and peripheral factors. Recalling those facts, it will be quickly recognized that defects of sensory functioning would tend to increase the number or frequency of illusions. Dullness of any sense would make illusions easier. Toxic conditions of the body which have any effect whatsoever upon brain functioning, either by way of retarding or speeding up its processes in whole or in part, would accentuate the central factors in the production of illusions. So too would emotional disturbances. But in the illusions of everyday life there is one feature not so much emphasized, and that is the fact that we sooner or later, usually sooner, discover that our illusory experience was an illusion. We discover it to have been an illusion by checking up with other experiences. If the bedpost appears to us as a ghost we look again and see that it is merely a bedpost. If we hear soft music and upon investigation discover that the hum of a motor was mistaken for music we change our minds and recognize that we had experienced an illusion. But when we see a person who continues to insist that the bedpost is a ghost, or that he hears music in spite of the fact that we show him the humming motor, if, in other words, we find a person who does not check his illusions against other experience and recognize them to be illusions, then we conclude that such a person is suffering *abnormal illusions*. Such illusions may certainly be designated as abnormal. Illusions due to abnormalities of the sense organs, the sensory tracts, or cortical functioning, which are checked up and recognized as illusions by the patient, might also be called abnormal because of the degenerative nature of the factors producing them, but it will add to the clarity of thought if such be termed *borderline illusions*. These latter are far more frequent than are those to which the patient does not adjust by checking against experience in general.

Illusions vs. Hallucinations. The relationship between ab-

normal illusion and hallucination is far from being clear, because of the continued uncertainty as to the factors producing hallucination. Psychiatrists now generally recognize that the hallucination may not be technically distinct from the illusion, but they find it highly practical to use the old and somewhat rough distinction: viz., that the illusion is a false perception of an objective reality, and that the hallucination is a perception-like process without an external object or source.

Hallucinations. These are very common in mentally diseased conditions. Auditory hallucinations are the most frequent. Patients will complain of voices speaking to them, some hear music, others hear more disagreeable sounds, one examined by the writer heard the sounds of a great battle going on high over her head. A patient who subsequently recovered wrote the following description of his auditory hallucinations:

“ . . . Within my range of hearing, but beyond the reach of my understanding, there was a hellish vocal hum. Now and then I would recognize the subdued voice of a former friend; now and then I would hear the voices of some who I believed were not friends. All these referred to me and uttered what I could not clearly distinguish, but knew must be imprecations. Ghostly rappings on the walls and ceiling of my room punctuated unintelligible mumblings of invisible persecutors. Those were long nights.”¹

These auditory hallucinations may be loud or very faint, clear or confused, single words or lengthy discourses, and may seem near or far away. In one curious form known as “audible thinking” the patient complains that his thoughts are so loud that every one must be able to hear him think. Visual hallucinations are also frequent. Visions attractive and unattractive appear and reappear. These may be very complicated scenes or may be simple to the degree of mere flashes of light or points of brightness. They may be sharp in detail or they may be vague. They may be diminutive in size and they may

¹ Beers, Clifford W., *The Mind That Found Itself*, p. 23.

be gigantic.¹ One person known to the writer saw miniature human beings everywhere, on the trees, buildings, furniture, etc., and even attempted to photograph them. Sometimes these visual hallucinations are flat, like pictures, and sometimes they will be found to have depth. Some of them appear as a veil in front of the patient through which he can but dimly see the outside world, while others entirely obliterate the outside world. Cutaneous hallucinations also occur. Patients report pricking sensations, ticklings, blows, caresses, warm and cold experiences, bugs of various kinds crawling over them, knives sticking into them, electric effects produced by some unknown villain at a distance. The writer knew an elderly woman who every night before retiring carefully wiped the sheets of her bed to remove the powder which she insisted some one regularly put there to cause her disagreeable sensations.

Smell and taste hallucinations are quite common. Usually they are of disagreeable things, filth, drugs, etc., although sometimes they are of flowers and perfumes. Kinesthetic or static hallucinations do occur, although with relative infrequency. Patients report that they fly, are lifted up by unseen hands, that their limbs were moved for them, and the like. Hallucinations of an organic nature are also encountered. Sometimes these are quite specific, as of pregnancy, while others are much less definite in nature, as that the "head feels as though it were made of wood," that there is "lead in the stomach," that there are internal cutting, gnawing or biting sensations.

Rarely are hallucinations enjoyed. The affective tone of the emotional reactions is usually unpleasant. The disagreeable and often persecutory nature of the hallucinations makes the patient unhappy, or depressed, or terrified. The patient may

¹ Unfortunately these are usually designated, even in the technical literature, as Lilliputian and Brobdingnagian hallucinations. For further information concerning these see: Conklin, Edmund S., "Photographed Lilliputian hallucinations," *J. Nerv. & Ment. Dis.*, 1925, 62, 135-140. Thomas, C. J. and Fleming, G. W. T. H., "Lilliputian and Brobdingnagian hallucinations occurring simultaneously in a senile patient," *J. Ment. Sci.*, 1934, 80, 94-202.

endure them for a time and eventually rebel against them. Usually they stimulate explanatory efforts on his part which result in delusions more or less elaborate. This will be discussed more completely under paranoia.

It must not be thought that hallucinations are confined to those who are clearly diseased, nor that the occurrence of an hallucination is a sure sign of insanity. The dream experiences of normal minds are hallucinations. The dream experiences are vivid, seem real and objective. It is only upon waking that the subject of the dream recognizes their hallucinatory nature, but such a recognition immediately differentiates the process from the hallucination of the diseased mind which is not recognized as such. They occur also in hypnosis and in other states of extreme abstraction, such as crystal gazing. In fact, there seems to be ample evidence to warrant the assertion that hallucinations occur, though rarely, in minds which are normal so far as any one knows. Many years ago a British society collected a large number of such instances.¹ In some famous cases the possibility of disease or normality is debated and also the cause of the hallucinatory-like phenomena variously interpreted. Mohammed heard voices and saw visions, Luther saw the devil and threw his inkstand at him, Jeanne d'Arc heard voices, Swedenborg saw heaven, Columbus is said to have had strange auditory, Napoleon visual experiences, and Cromwell a little of both.

Theory of Hallucination. Such striking phenomena have naturally challenged explanation, and as a consequence many theories have been offered. Unfortunately no completely satisfactory explanation is yet available. Some argue for a purely *central* or cortical explanation. Perhaps the best presentation of this is to be found in James' *Principles of Psychology*.² He suggested that the greater intensity and vividness of the hallu-

¹ Gurney, E., Myers, F. W. H., and Podmore, F., *Phantasms of the Living*. London, Trübner, 1886. Pp. 573.

² Vol. II, p. 122.

cination when compared with that of the image can best be accounted for by thinking in terms of the ease or difficulty of onflow of excitation through the nervous paths of the cortex. If conditions in the cortex be such that the normal onflow, or leakage, as he called it, be checked or dammed up, then an explosive-like effect is the consequence and the conscious correlate of this explosion is the brilliant hallucination. Of course this is no more than a theory and is to be treated with the same attitude of suspended judgment as are all theories. It should be added, however, that it checks very prettily with another theory and another and contrasting mental condition. In epilepsy there is a sudden loss of consciousness and more or less violent motor activity. Hughlings Jackson offered as a theoretical explanation that this appeared to be due to a sudden release of inhibitions in some portion of the cerebral cortex with the consequent violent discharge of energy from the cortex. This would account for the vigorous motor activity of the seizure and was also used by Jackson to account for the loss of consciousness. The theory James offered for the explanation of the hallucination is thus but the reverse of the Jacksonian theory of the loss of consciousness in the epileptic seizure. James did not limit his interpretation to conditions of an exclusively cortical nature. He said: "Wherever the normal forward irradiation of intra-cortical excitement through association-paths is checked, any accidental spontaneous activity or any peripheral stimulation (however inadequate at other times) by which a brain-center may be visited, sets up a process of full sensational intensity therein."¹ He quite evidently recognized the possibility of an hallucination having a peripheral stimulus, and that points the way to another theory which must be considered.

But first it should be emphasized that there are many instances of hallucinatory phenomena which seem to be of purely central origin. This is especially true of epileptic auras. Many

¹ Vol. II, p. 128.

epileptics are warned of the onset of a seizure by the appearance of a bright light, some peculiar noise, and even organic sensations of a clearly hallucinatory nature.¹ These are supposed to be a part of the cerebral disturbance which eventuates in the seizure proper. The ingestion of alcohol, mescal, opium and many other drugs produce remarkable phenomena usually classified as hallucinatory. The crawling bugs, snakes and other grewsome sights of the delirium tremens cases are well known. De Quincy made the effects of opium familiar to all students of literature. Devotees and experimenters alike tell of the marvelously colored hallucinations produced by mescal. Whether this be a purely cerebral influence of the drug or whether the effect is indirectly by way of the sensory apparatus is not entirely clear. It seems probable that both modes of production may operate. Some of these drug cases are, however, used as an argument for the purely central nature of the hallucination. Severe headaches are accompanied occasionally by visual hallucinations. These appear as bright lights in zigzag, ovals, star shapes, and angled lines and are of various colors. These also are pointed to as probably of cortical origin.

In contrast to the central theory many have held a *peripheral* theory for the explanation of hallucination.² The substance of this theory is that all hallucinations are of the nature of perceptive illusions, that there is always some activity of a sense organ, stimulated from without or within the organ, which in turn arouses the process known as the hallucination. By this theory the explanation of an auditory hallucination is sought in some abnormality of the middle or inner ear which produces a chronic stimulation of the auditory apparatus. An example of this would be the tinnitus, or roaring in the ears. If such a stimulus were weak and the consequent response insufficiently strong to receive attention, to be isolated and recognized, then it might

¹ See Chapter XIV.

² See especially Binet and Féré, and Sidis. (See reference list at end of chapter.)

conceivably arouse other auditory activity the cause of which would be unknown to the subject, and because the source of the disturbance was unknown the subject might argue that it was of a purely central nature. Slight imperfections in the functioning of the retina might in like manner cause the visual hallucinations. In the same fashion the argument can be extended to all kinds of hallucinations. Sidis further argued that there may be for consciousness a dissociation of the peripherally excited factor and so the subject be aware only of the central factors of the process. He likened the hallucination to a perception with the sensory core of the process omitted or suppressed. If the sensory core of a perception were omitted the remainder would certainly seem very bizarre, and without sensory foundation. And that is to be sure just the nature of the hallucination, but certain proof for the actual existence of the alleged suppressed factor is wanting.

In support of this peripheral theory it must also be recalled that in the normal mind synesthetic, or synesthetoid, perceptions are common. One sense may be stimulated, but the dominant feature in consciousness is the imagery of another modality. Slight abnormal functioning of one sense organ might thus arouse by association imagery in another modality and thus totally mislead the observer into thinking that there was no peripheral origin. So in seeking the peripheral origin for a visual hallucination, for example, one must look not only to the eyes but to other sense organs as well.

Psychologically this theoretical debate is of almost minor importance. The patient who hears a battle going on in the air over her head and insists that it is there even though others are so unfortunate as to be unable to hear it, and is utterly impervious to all arguments to the contrary, is obviously suffering some defect and is abnormal. Whether this abnormal process be started by a stimulus affecting first the auditory or other sensory apparatus or directly affecting the auditory area of the cortex is relatively unimportant except for the physician and

the surgeon. To the psychologist the important fact is that the stimulus, whatever it be, even though it be some minor thing in the outside world, is not apparent to the patient nor to any one else. The patient does not recognize any sensory process as the cause of the experience nor does the patient recognize the process itself as abnormal.

Pseudo-hallucinations. There are instances where the patient or subject does recognize the process experienced as being hallucinatory, although unable to discover any stimulus for the process. Such cases are known as "pseudo-hallucinations." Usually these pseudo-hallucinations are partially controllable by the subject; they can be driven away at will, although rarely can they be called up at will. The hallucinations of normal dream life might be called pseudo-hallucinations, although their false nature is not recognized at the time of the experience.

Classification. By emphasizing the apparency or not of the stimulus to the patient or to the observer, the presence or absence of recognition of the falsity of the process and proper adjustment thereto, a series of valuable distinctions appears. This can be put in tabular form as follows:

	<i>Stimulus</i>	<i>Recognition</i>	<i>Condition of</i>	
			<i>Sense App.</i>	<i>Cortex</i>
1. Normal perception	Apparent		Normal	Normal
2. Normal illusion	Apparent	Present	Inadequate	Preparation
3. Borderline illusion	Usually apparent	Present	Defective	Normal or defective
4. Abnormal illusion	Apparent	Absent	{ Normal or defective	Defective
5. Pseudo-hallucina- tion	Not Appar.	Present		
6. Hallucination	Not Appar.	Absent	{ Normal or defective	

By this means the intimate relation between illusion and hallucination is recognized and maintained and at the same time it is possible to see all the gradations from normal perception on the one hand to hallucinatory phenomena on the other where

there is ample evidence of cortical defect. In the light of this scheme it will be seen that James' theory is applicable to the defective functioning of the cortex in hallucination and that only; and that Sidis explains the failure to recognize the hallucinatory nature of the process as well as the apparent absence of any sensory cause. For a complete explanation it would be necessary to use both theories. James' theory alone would be adequate for the explanation of pseudo-hallucination, and then perhaps both of them would be necessary again for the explanation of abnormal illusions, as they are classified in the table above. Borderline illusions are here treated as due to defects in the sensory apparatus with the remainder of the central nervous system functioning normally.

Hypnagogic Hallucinations. The hypnagogic state is that period of daze between waking and sleeping.¹ The duration of this period as well as the frequency and intensity of hallucinations occurring therein seems to be dependent upon the subject's general physical condition. People subject to such phenomena report visions of flowers, people, landscapes, fields of color, touch and motor sensations of considerable variety. The mere relaxation prior to going to sleep seems sufficient to bring them on. The fact that they are so largely of a visual nature has led to the argument that they were stimulated by photo-chemical changes taking place in the retina after the closing of the eyes, thus falling into line with the peripheral, or illusion, theory of hallucination, but the fact that touch and motor hallucinations also occur in the hypnagogic state makes the peripheral explanation more difficult, although that might be explained in terms of motor relaxation or of association. These are of the order of pseudo-hallucinations.²

¹ Strictly speaking the term hypnagogic should be used only for the state between waking and sleeping, and another term (hypnapompic) be used for the corresponding state between sleeping and waking. Usage, however, permits the one word, hypnagogic, to designate both states.

² For a very informative study of hypnagogic hallucination see Leaning, F. E., "An introductory study of hypnagogic phenomena," *Proc. Soc. Psych. Res.*, (Eng.) 1925, 35, 289-403.

Meaning in Illusions and Hallucinations. The psychologically trained reader will observe that the difference between a normal illusion and an abnormal illusion as well as the difference between a pseudo-hallucination and a genuine hallucination is fundamentally one of meaning. The way in which the meaning accrues to the sensory or imaginal process distinguishes the normal from the abnormal. If the meaning which accrues in an individual mind to a given sensory process is such as to be obviously absurd to all who observe the same, such a perception is termed an abnormal illusion. An excellent example is that of the patient to whom the sound of rain meant music, while to all others the meaning of that succession of sound intensities and qualities was rain on the roof. If a patient hears a voice and fails to find with his eyes any human presence who might be the source of such a voice and persists that nevertheless the voice has an objective origin, although invisible, then there is something obviously wrong with the way in which meaning accrues to the centrally (or the obscurely peripherally) aroused process. That patient is properly said to be abnormal and to suffer hallucination. But if a subject hears a voice and is visually unable to discover any human cause for it and then concludes that he has experienced a hallucination it is obvious that the functioning of the meaning process was very different in his mind. From the point of view then of the psychology of illusions and hallucinations the peculiarity of the abnormal mind lies in a defective functioning of the meaning process.

The exact nature of this defective functioning of meaning is less clear. Certainly there is a distortion of that phase of meaning ordinarily termed projection. From general psychology it will be recalled that sensory processes are projected forward or outward, that imaginal processes are projected backward or vaguely inward, and that there is a gradation between these. The sensory after image is projected forward or outward while the memory after image may be experienced with either the forward-outward projection or the backward-inward projection.

In the hallucination there is an image core, certainly if it be of central origin, which has associated with it the forward-outward projection meaning when it should have the backward-inward projection meaning. This is equally true in both the pseudo-hallucination and the genuine hallucination. Anyone who has experienced such simple pseudo-hallucinations as the headache visual experiences will have observed how persistently they appear to come from without although the experiencer may observe quite clearly that there is no objective stimulus for them. The problem then is apparently twofold. Why do some imaginal processes carry the wrong projection meaning, and the proper interpretative meaning (pseudo-hallucinations), and why do some imaginal processes carry the wrong projection meaning and also the wrong interpretative meaning (hallucinations)?

The answer to these questions leads into a field of psychology which is not well illuminated by systematic study. First (1) of all, it may be that such distortions of the meaning associations of simple processes are due to some organic change in the central nervous system. There may be some actual deterioration which forces the flow or spread of excitation to take a course other than it would have taken when the brain was normal. While this explanation is quite satisfactory for many cases, it confronts the disagreeable fact that a vast number of hallucinated cases reveal upon post-mortem no discoverable cerebral abnormality.

It can also be argued (2) that these distortions of meaning are due to an imperfect development of the nerve patterns underlying perception and conception. If the patterns for associated meanings were not well established and protected from the wrong direction of flow by high synaptic thresholds, then sidetracking into the wrong associations could be easily brought about. Or perhaps the correct associative paths were never established. The writer once published¹ the description of an

¹ "Photographed Lilliputian hallucination," *J. Nerv. Ment. Dis.*, 1925, 62, 133-140.

elaborately hallucinated case wherein the meanings of the hallucinatory processes had apparently been cultivated for many years, if not from childhood, and these meanings were uniformly wrong.

In terms of the psychoanalytic theory (3) there are possibilities of explanation which have not been overlooked. Psychoanalysts explain the vividness, the force, the apparent reality, of the hallucination and the abnormal illusion as due to the energy of some wish or complex which is but poorly controlled by the ego and the super-ego. Even the imaginal core as well as the meanings of the hallucination may be the product of this conflict between the complex and the repressing mechanisms. Perhaps there has been a displacement and projection as a means of concealing the true meaning and of making a partial adjustment to a situation which, if the truth were fully conscious, would be highly disagreeable. The persistence of the projection meaning in the hallucination may be explainable in terms of the psychoanalytic concept of projection.¹ The hallucination and the distortions in the abnormal illusion would thus be thought of as related to, and to a considerable extent symbolizing, a repressed wish or complex in the unconscious.²

With certain modifications, the psychoanalytic way of thinking about these abnormalities is growing in favor. If there is some readily determinable organic cause, that is accepted; but otherwise interpretations of abnormal illusions and hallucinations are made in terms of a psychogenic theory. The psychoanalytic theory is obviously psychogenic, but psychopathologists and specialists in abnormal psychology are less and less willing to accept all of its assumptions, much as they favor its psychogenetic approach. Therefore some of its concepts are accepted and a simplified scheme of interpretation is worked out in terms of maladjustment and its consequences. Abnormal

¹ For presentation of the psychoanalytic concepts used here see chapter II.

² For a good example of the psychoanalytic way of thinking about hallucinations see Coriat, I. H., "A psychoanalytic theory of hallucinations," *Psychoanal. Rev.*, 1934-21, 372-380.

illusions and hallucinations rarely appear, however, as isolated phenomena. They appear as items in the behavior of persons who manifest other abnormalities as well. They exist as symptoms in a syndrome. As such they must come up for discussion again when the larger patterns are presented in the chapters on psychasthenic phenomena, hysteria, and the psychoses.

SELECTED REFERENCES

- Behan, R. J., *Pain, Its Origin, Condition, etc.* New York, Appleton, 1920. Pp. 920.
- Best, H., *Blindness and the Blind in the United States.* New York, Macmillan, 1934. Pp. 714.
- Best, H., *The Deaf.* New York, Crowell, 1914. Pp. 340.
- Binet, A., and Féré, C. S., *Animal Magnetism.* London, Kegan Paul, 1887. Chap. IX.
- Brill, A. A., *Psychoanalysis.* Phila., Saunders, 1922. Chap. VIII.
- Coriat, I. H., "A psychoanalytic theory of hallucinations," *Psychoanal. Rev.*, 1934, 21, 372-380.
- Cutsforth, T. D., *The Blind in School and Society.* New York, Appleton, 1933. Pp. 263.
- Fraser, C. F., "The psychology of the blind," *Amer. J. Psychol.*, 1917, 28, 229-237.
- Galton, F., *Inquiries into Human Faculty.* (See section on visionaries.)
- Gordon, A., "Obsessive hallucinations and psychoanalysis," *J. Abn. Psychol.*, 1918, 12, 423-430.
- Harry, Gerard, *Man's Miracles.* New York, Doubleday, 1913. Pp. 197.
- Jones, I. H., *Equilibrium and Vertigo.* Phila., Lippincott, 1918. Pp. 444.
- Keller, Helen, *The World I Live In.* New York, Century, 1908. Pp. 195.
- Leaning, F. E., "An introductory study of hypnagogic phenomena," *Proc. Soc. Psychic Res.*, (Eng.) 1925, 35, 289-403.
- Maury, Alfred, *Le sommeil et les rêves.* Paris, Didier, 1861. Chap. IV.
- Norman, Connolly, "Notes on hallucinations," III. *J. Ment. Sci.*, 1903, 49, 454-473.
- Sidis, B., *Foundations of Normal and Abnormal Psychology.* Boston, Badger, 1914. Chap. XXII.
- Sidis, B., *Symptomatology, Psychognosis and Diagnosis of Psychopathic Disorders.* Boston, Badger, 1914. Chaps. XII, XIV, XV.

ILLUSIONS AND HALLUCINATIONS 79

Stoddart, W. H. B., *Mind and its Disorders*. Phila., Blakiston, 1912.
Part II, chaps. I and II.

Störing, G., *Mental Pathology in Its Relation to Normal Psychology*.
London, Sonnenschein, 1907. Pages 19-70.

Taylor, W. S. (Ed.), *Readings in Abnormal Psychology and Mental
Hygiene*. New York, Appleton, 1926. Chap. XX.

Wheeler, R. H., *The Synaesthesia of a Blind Subject*. Univ. of Oregon
Pub. 1920, 1, No. 5. Pp. 61.

CHAPTER IV

MEMORY ABNORMALITIES

BY DEFECT OF IMPRESSION, BY DEFECT OF RETENTION,
BY DEFECT OF REPRODUCTION, BY DEFECT OF RECOGNITION,
HYPERMNESIA, APHASIA.

Defects of memory are usually so spectacular as to attract much attention. The result has been a voluminous literature on the subject and a most confusing development of terms and classifications. The student needs to be especially on his guard in reading this literature because of the lack of a common terminology. Various schemes of classification have been offered, but none seem to have been generally adopted in their entirety. It is consequently wise to discover as quickly as possible what scheme any particular author has in mind. The one here used is similar to those in Baldwin's *Dictionary of Philosophy and Psychology* and in Rosanoff's *Manual of Psychiatry* but differs from each in certain details.

It seems most convenient to think of the abnormalities of memory in their relationship to the four aspects or processes which make a memory consciousness possible and complete. We are accustomed to think of the impression, the retention in the nervous system, the reproduction and the recognition. Defect of any one of these will distort a given memory if not make it impossible. The exaggerated facility of any of these four would make for abnormally frequent and detailed memory consciousness. It must be clear at the outset that a mere physical retention of an impression is not thought of here as memory. Memory as here conceived involves reinstatement with sufficient degree of detail to bring about recognition, that is relatively definite and correct placement in the individual's past.

The use of the term amnesia is itself sometimes misleading. Strictly speaking it should mean absence of memory, that is, absence of reproduction and recognition, and so it will be used in this chapter.

I. By Defect of Impression. Many abnormalities of memory can be traced to something which prevents the making of a good impression. That which is but vaguely sensed or perceived makes so poor an impression that its subsequent recall or reproduction is not likely. Many conditions may operate to make the impression vague. The wandering of attention because of fatigue and the physiological condition of the central nervous system in fatigue prevent a good impression. Incidents which arouse no more than a marginal consciousness are likely to be recalled with difficulty because of the vagueness of the impression. Stuporous, drugged, confused states whatever be their cause obviously make a detailed impression impossible. The amnesia resulting from this is sometimes, although not exclusively and consistently, called *anterograde amnesia*. Occasionally patients will be found whose nervous system is in such a condition that no new impression is ever recalled. Sometimes this is called *continuous amnesia*. Such patients recall their earlier past with approximately normal facility, and go about a routine detail of life quite well. They will meet new people and new situations with attention and apparent understanding, but a little while afterward are quite unable to recall any vestige of the experience. They may not be able to recall that they have eaten a meal shortly after the eating has been concluded. Some forms of epileptic seizure leave the subject for hours, sometimes even for days, in a semi-confused or automatic state from which there is subsequently no recall of happenings. Such states occasionally make a serious complication in criminal cases either through their unsuspected presence or through their pretended presence as a matter of dishonest defense.

II. By Defect of Retention. That all impressions fade out

to a certain limit has been experimentally determined. The curve of forgetting should be kept in mind here with the modification that we are dealing with meaningful material as a rule. Individuals also seem to differ in their native retentiveness. Perhaps this is not a native matter at all but one of acquired physiological difference; but whatever it be it is yet largely beyond our control and knowledge. The normal fading out of the impression, especially of meaningful material, eventually reaches a point of little change and we have that residuum which remains with us for relatively long periods of time. Degeneration as the result of injury or disease may obliterate this residuum. Cases of this form of amnesia are frequent.

Sometimes the amount of the loss is progressive as in general paralysis, a syphilitic degeneration of the cortex which from first disturbing the recallability of recent and minor items gradually spreads to a complete amnesia for all of the past life. This illustrates what Ribot long ago termed the *law of regression*, that in memory disturbances the recall of the most recent experiences is the first to suffer disturbance and then the effect spreads progressively to the older and older memories until the earliest and most perfectly established memories are the last to go. While this law cannot be said to hold for all forms of amnesia it certainly does apply in many. Sometimes a certain period of the past is obliterated. Burnham quotes the following illustrative case:

Female, 17 yrs. . . . "In the spring of last year while attending the university I became exhausted through overwork. One afternoon when returning home something seemed to snap in my head and it went whirling. This itself is clear in memory, but how I got home and what happened in the next three days or in the whole preceding month are forgotten. Of course from what has been told me I know now about what did happen but it is still impersonal as a story. I have no memory of the lessons we studied, and though during the time I was sick and before

it I wrote verses constantly, I do not know them now or recognize them as my own work."¹

In another case the injury received in an automobile accident obliterated a considerable portion of the patient's past, which he supplied for himself subsequently by most astute quizzing of his associates, but, as in the case of the girl just quoted, the information was impersonal and without recollection or placement in his own past. Instances are reported of severe fevers resulting in the loss of all knowledge of some language with which the patient had previously been familiar. As the material so lost can never by any means be restored to voluntary recall, and as it is never reproducible in dreams, hypnotism or crystal gazing, the conclusion is inevitable that the impression made in the nervous system has been obliterated. This form of amnesia is often referred to as retrograde amnesia.

There is a form of amnesia usually designated as *retroactive amnesia* which is somewhat difficult of classification. It might be placed either in this group or in the first group, those due to disturbance of the impression, because it partakes of the characteristics of each. The following is an illustrative case:

College student, male. Left his laboratory work between half-past three and four in the afternoon for football practice, went to the gymnasium, dressed, went out on the field and played, was injured about half-past four, continued to play in a dazed condition and did not regain consciousness until ten o'clock that evening. A part of his own description written the next day follows: "Some time Thursday afternoon I left psychology laboratory to go and play a game of football — I do not know the exact time — or at least I don't remember the time. According to students and coaches, I went to the Gym., I dressed, went out on the field, played almost all of the game, they say I played center, they also say that I played a good

¹ From Burnham, W. H., "Retroactive amnesia," *Amer. J. Psychol.*, 1903, 14, 382-396.

defensive game, but at times I just passed the ball back at will — a couple of times I passed the ball over their heads. After the game I walked and talked normally, but at times I went off at a tangent and asked the boys to feel my head. . . . I told the boys that I knew them, I did not know my locker number, I did not know how to open it. I wanted to take two showers, I combed my hair four times. . . . We went out and I drove the car to the . . . frat house, went in and had dinner. . . . All this I do not remember, others have told me of my actions."

The remarkable thing here is not the automatic activity after he was injured but the fact that he does not recall leaving his laboratory, dressing for the game, the beginning of the game, nor any of its events up to the time of his injury — that he does not now recall events which took place some little time prior to the injury. It is that backward-working effect or inclusion which led to the term retroactive amnesia.

Such cases are quite frequent, many of them probably passing unnoticed because the extent of the retroactive effect is too slight to be noticed. Often it does not extend backward more than a few minutes prior to the disturbing accident. The explanation of this usually offered is in terms of a setting process or period of organization through which all conscious experiences apparently must go to insure subsequent recall. The injury disturbs or stops the setting process and consequently those experiences which had not become set or organized are no more recallable subsequently than are the events of the period of unconsciousness. This phenomenon is undoubtedly allied to the well-known effect of the distribution of repetitions in the economy of learning.

III. By Defect of Reproduction. Of this form of amnesia there are clearly two kinds. Sometimes there is a complete amnesia for the entire past of the patient and yet it is not of the degenerative type because the past which cannot be voluntarily recalled nor stimulated to re-presentation in waking con-

sciousness can be and is reproduced in dream states and in hypnosis. This proves that the past is still retained intact but that the defect takes the form of preventing reproduction. In other cases certain systematized portions of the past are similarly beyond the possibility of recall or re-presentation in the waking consciousness, and there is likewise adequate evidence that the material is retained but for some reason cannot be recalled. For this reason these two forms will be discussed in separate subdivisions.

A. *General.* Cases of this complete amnesia for the entire past of the individual, while fortunately not frequent, have nevertheless been reported in considerable detail. One of the most famous cases, perhaps because of its elaborate presentation, is known as the Hanna case.¹ In this case, as the consequence of a fall and head injury, the entire past seemed to be obliterated. There was no recognition of himself or his relatives or friends. He seemed to be as ignorant as an infant. All the simple details of everyday life were retaught to him. Days and weeks of the new life passed during which his new acquisitions constituted his whole knowledge. Eventually by skillful treatment his memory was restored. It should be observed, however, in reading this and similar cases, that such patients relearn with astonishing rapidity, which suggests an actual influence of the old habits upon the relearning, and also that the past frequently makes itself evident in dream states. These facts as well as that of the eventual restoration show that the past was still retained and that the injury had merely made impossible for a considerable time the functioning of the normal process of reproduction. McDougall² has more recently reported a few cases where the loss of memory was not quite so complete, removing everything except the accomplishments of the first eighteen months of life, thus carrying the individual

¹ Sidis, B. and Goodhart, S. P., *Multiple Personality*. New York, Appleton, 1905. Part II.

² McDougall, Wm., "Four cases of regression in soldiers," *J. Abn. Psychol.*, 1920-21, 15, 136-156.

back to the behavior of infancy. In one of these cases there were some curious omissions in the completeness of the amnesia, as, for example, the retention of the smoking habit, although the person was otherwise as a child.

B. *Dissociative or systematic.* In this group will be found most of the so-called "shellshock" cases and the hysterics of civil life. They will be more thoroughly studied in the section devoted to hysteria, but their relationship to amnesia must be recognized here. From the literature of the war cases the following is typical:

The patient's family and personal history are negative. Entered Base Hospital 117 . . . and at that time had a complete amnesia for all events from the morning of April 11, 1918, up to and including October 25. The last event that he remembered prior to the onset of his amnesia was landing in Liverpool and the first part of his march from the docks to the train. The intervening six months and fourteen days were a complete blank and his first recollection after this amnesic period was being arrested by one of the military police whom he told he was looking for his lieutenant. . . . Because all events prior to his landing in England, that is, including his early life, his occupational and school history and military life, were intact — but the patient could not by associative methods go beyond experiences on arriving at Liverpool — the patient was subjected to hypnosis and the entire memory restored in about two hours.¹

The systematic nature of the amnesia in this case should be observed; it was confined to a particular period of his life, that since his arrival in England and his active participation in the war. (And the restorability of the memory loss points to its dissociative nature.) The material for memory of the disturbed period was retained but could not be reproduced or stimulated into re-presentation.

¹ Thom, D. A. and Fenton, N., *Amer. J. Insanity*, 1920, 76, 437-448. This case, pp. 441-442.

Sometimes the extent is much more limited and sometimes it is confined to the functioning of some particular portion of the body. The hysterical cases of loss of speech, paralysis of arms and legs, etc., are really disturbances of an amnesic nature. In these cases the patients are unable to think in terms of the lost function. They are unable to move hand or arm or leg, as the case may be, because they are unable to think of doing so. The possibility of function remains intact as is proved by the presence of reflexes, appearance of the function in sleep and its continued restorability, but the patient cannot think of walking or talking or using the arm, and so is as helpless as though the paralysis were of an organic nature. The disturbance is in the form of an amnesia for that particular function. While the explanation of such curious cases will receive more complete discussion in the sections on hysteria, its essential nature as an amnesia through disturbance of the process of reproduction may be observed here.

IV. By Defect of Recognition. For some of these cases the term paramnesia has often been employed. As the term etymologically means distortion of memory there is no good reason why it should not be applied to all the forms explainable as disturbances of the process of recognition. Of such disturbances there can be isolated at least four forms.

A. *The complete failure to recognize or the illusion of the "never-seen."* The following case description taken from Burnham will illustrate. It is given in the patient's own words:

"One morning while on my way to the city I left the house and walked toward the place where I was to take the street car, a distance of four short blocks, a route traversed by me almost daily since I returned from . . . and one quite familiar to me before I went away. I walked along absorbed in thought, when I suddenly found myself in a strange place. I looked ahead, to the right and to the left, and then turned and walked back, but in no direction could I see anything I had ever seen before. I walked back

to the street I had last crossed and looked about as before, with the same result. Still it did not seem possible that I could have gone astray, as I could not have found strange ground by following the street I had started on without going a considerable distance, and I did not think I had been walking more than two or three minutes, and I did not think I had turned from that street. As there was nothing in sight which I could recognize I tried to recall the looks of the houses on my usual route and to compare them with those in sight, but I could not visualize them sufficiently to make a comparison. . . . I concluded to go on, and did so, coming to a street with car-tracks within less than a block, but there was nothing familiar, in fact nothing I could recognize as having seen before. I waited till a car came along and read on it the sign of the line of cars I was accustomed to take and so boarded the car and got safely to the city."¹

This patient was a professional man who had been suffering for some months from overwork and probably nervous disease as well. The defective functioning of recognition is obvious. Still the subject was not reduced to a mere mass of sensory presentations. He did perceive buildings as being buildings, houses as houses, streets as streets, street cars as street cars, but there was a failure of that more elaborate arousal called recognition. It is to be noted that the subject was fatigued because of the weakening effect upon associations which fatigue is known to have.

Probably the fatigue effect upon an unstable nervous organization is the explanation in this case. There may be, however, instances of failure to recognize which are of an hysterical nature where the complete arousal of the recognition is blocked by some condition, attitude, or intensely disagreeable association. The discussion of this will be resumed in the chapter on hysterical phenomena, but the fatigue effect needs to be em-

¹ Burnham, W. H., "Retroactive amnesia," *Amer. J. Psychol.*, 1903, 14, 382-396.

phasized because it is doubtless also present as a contributing factor in the hysterical failures to recognize. The probability of nervous disease which Burnham mentions is important because it may be that fatigue alone could not produce so elaborate a disturbance of recognition. As no mention is made of emotional disturbance probably in this case there was none, but the possibility of emotional disturbance should always be considered. Fatigue combined with emotional excitement of a profound and depressing nature might cause such a disturbance of recognition.

B. *The illusion of having already seen, false memory or false recognition.* It has been said that thirty out of every hundred people experience this at some time. Certainly it is a common phenomenon. A friend of the writer's while tramping through mountains where he had never been before came out into an opening where everything appeared to be familiar, he seemed to recognize it all. In another instance a man who had never been west of Chicago had business which took him into a town in Iowa. As he started up the street of the town he was surprised to find it familiar, he seemed to have seen it all before.

Explanations of such experiences vary somewhat, and it is likely that the correct explanation of one false recognition may not always apply in every detail to all others. Both of these cases may be more closely allied than first appears to the cases of complete failure to recognize described above. Certain features of the situations presented may actually be quite like some frequently experienced before. Normally these features would be singled out for attention by the process of recognition, but the complete process of recognition may not take place because of fatigue — the possibility of fatigue is very great especially in the mountain-climbing case. The familiar items might thus, because of the fatigue condition, fail to arouse complete recognition and yet arouse some feeling of familiarity. This apparently unattached feeling of familiarity would be assigned to the whole situation and the story related for the

wonderment of associates. Such paramnesias are known to occur more frequently in states of excitement and of fatigue.

A still simpler possibility is that before actually coming out into the opening the mountain climber caught glimpses of portions of the scene, as he struggled up through the trees, and that these were sufficient to produce a partial recognition when he confronted the whole scene, the fatigue preventing recall of the preliminary glimpses. The same may be true of the man visiting the Iowa town. He may have started up the street, then paused to look in a store window rather absent-mindedly. Upon turning again and taking a good look ahead he might easily experience a partial process of recognition, partial because of the failure to relate the present look to the up-street glances prior to his looking into the store window. If the recognition had been complete it would have included memory for the earlier glimpses of the street scene and an understanding of the feeling of familiarity. False recognitions will usually turn out to be incomplete recognitions attributable to the effects of fatigue and excitement.

C. *Distortions of memory by "Unconscious inference."* Experimental studies of memory have long shown the inaccuracies appearing in testimony given by the most honest and capable observers. Items which might have occurred, and are wholly consonant with those items which did occur, are often included in the testimonies with complete confidence in their accuracy. After a few repetitions portions of testimony at first given with caution as possibly inference and not fact are rapidly included along with those items actually observed. The repetitions in experimental work are in part designed to eliminate such inaccuracies in observation and report. Upon subsequent repetition of the story, items which at first were but inferential are recognized as having been in consciousness before. This secondary recognition is confused with the recognition aroused by the reproduction of events actually a part of the original situation. If the subject at the time of the original

experience was fatigued or emotionally excited then the original impression could not have been vivid, thus providing an excellent basis for illusions of observation as well as for imperfections in subsequent recall.

In the study of abnormal and borderline phenomena this form of memory falsification must be constantly kept in mind. Case histories, whether obtained from patients or relatives, are subject to such sources of error. Patients who have experienced some abnormal mental state, or what they may think abnormal, are so disturbed by emotion that their reports are often far from reliable. Tales of dreams that came true, alleged telepathic experiences, apparitions, the events of spiritistic séances, reports of the conduct of those suspected of insanity, must all be scrutinized with the most meticulous care and checked in every possible way to eliminate such errors. The student of abnormal and borderline phenomena cannot be too cautious in this regard.

D. Retroactive paramnesia. This term seems as good as any for the designation of a form of memory distortion extraordinarily common. Recollections of the long past are peculiarly subject to distortion by the inclusion of one's personal recollections of what others have said has happened. This is peculiarly true of recollections of childhood. We have so often heard from our elders that we did certain exceptionally brilliant things in our childhood and have ourselves been guilty of occasionally relating the incidents that we find ourselves recalling the time when the events occurred. That which we could not originally recall becomes fitted into our recollections through the reports of our elders. Again there is confusion between the recognitions of our own actual experience as a child and the recognition of hearing others tell of our childhood doings. Alterations due to the process of forgetting bring these into such a similarity that the distinction is lost. If this were the only way in which this process of backward-working paramnesia falsified our memories it would not be serious. We

are, however, also prone to confuse the memory of fantasies with the past and eventually fail to distinguish fact from fantasy. Fantasies, the constructions of day dreaming and nocturnal dreaming, hold an increasingly important place in the interpretations of many forms of abnormal and borderline phenomena; and they are now increasingly recognized for their influence upon the lives of even normally minded people. For that reason the distinction of them from memories of externally aroused experiences is important. Descriptions of childhood days given in all sincerity may subsequently reveal the confusion therein of masses of material which was of fantasy origin.

Hypermnesia. In contrast to the defects which result in the various forms of amnesia there are the conditions which produce an exaggerated or heightened recall known as hypermnesia. Strictly speaking hypermnesia signifies a condition in which there is an extraordinary facility of all four of the aspects of the process, impression, retention, recall or reproduction and recognition. As a matter of fact the term is most often used to designate conditions which result in or stimulate an extraordinarily facile reproduction, whether there be recognition or not. Actually then it is not an abnormally heightened memory in the full sense of the word memory but a facilitation of the process of re-presentation. Dreams are often said to be hypermnestic because of the frequent re-presentation therein of childhood experiences which could by no effort be voluntarily recalled. Hypnosis also lends itself to the heightening of reproduction but not necessarily of recognition. Crystal gazing will also often reproduce former experiences which the subject cannot recall and does not recognize when they are presented, but which can be proved to be the result of former experience. The flight of ideas, recognized or not, in maniacal excitement is called hypermnestic. Toxic conditions stimulate a usually unrecognized reproduction of long-forgotten experiences. And it is said that the excitement of impending death by drowning

or accident forces the recall of "all of the past life." If this is true it would of course be a most remarkable instance of hypermnesia. Professor Stratton¹ has given us a most valuable study of such phenomena. Here is one of his cases:

"One who at the time (San Francisco earthquake) was in a condition of hypomania told me his surprise at the marked freshening of all his memories; it seemed to him that he could clearly recall the substance of every book he had ever read, and I know him to have been a very wide reader."

Apparently it is safe to say that emotional excitement stimulates to a hypermnesic condition. The emotional effect seems also to be retroactive. Stratton reports many cases demonstrating a greatly increased detail and clearness of recall for events of several hours prior to the shock. In the study of amnesias it has been assumed that physical shock disturbs a hypothetical setting or fixation process, thus causing retroactive amnesia. Perhaps great emotion has the reverse effect of hastening and intensifying the setting or fixation of recent experiences and thus of heightening the possibility of subsequent recall, producing a retroactive hypermnesia.

Aphasia. Discussions of amnesia long included a consideration of the aphasias, on the supposition that an aphasia was a disturbance of memory involving language only. The old diagrams showing the cortical localizations of motor speech, visual speech, auditory speech, written speech, were invoked and a list of aphasias corresponding to what were supposed to be the effects of lesions in those locations was presented. As a result we have heard much of motor aphasia, auditory aphasia, and the like. In recent years, especially with the vast amount of information made available by the war, there has been a marked change in the interpretation of language disturbances. So much evidence has been presented to the contrary, it is now

¹ Stratton, G. M., "Retroactive hypermnesia and other emotional effects on memory," *Psychol. Rev.*, 1919, 26, 474-486.

no longer possible to think in terms of these highly limited aphasia concepts, to think of motor aphasia as due to a lesion in the third frontal convolution, or of visual aphasia as due to a lesion in the angular convolution. Not only have such notions been discredited by incontestable evidence to the contrary, but they are also in conflict with the psychology of speech and with the psychology of voluntary control of motor activities. Such concepts are too simple and smack decidedly of the faculty psychology and the brain spot hypothesis. Inability to speak does not necessarily indicate the absence of motor images nor does the presence of such images mean necessarily that the subject can talk. Speech defects are now being interpreted in terms of more general or wider-spread disturbances of the organism, especially the central nervous system, and they are being classified in terms of the consciousness of meaning. Head¹ thinks of speech defects in terms of disturbances of "symbolic thinking and expression," which is an elaboration of what Hughlings Jackson called "propositionizing." Patients are met with who find the use of words difficult and have a very restricted vocabulary but at the same time have a full consciousness of meanings of words, phrases and objects. On the other hand case descriptions are reported where perception for single words seems normal and yet upon further examination a remarkable defect is found in the consciousness of meaning of phrases and sentences.

Head presents aphasia according to the following classification:

a. Verbal defects.

This may be a disturbance of perception for word meanings, of word formation and expression, or a combination of these. The patient may know what he wants to say or write but be unable to find the proper words. Reading may be impossible. Even

¹ Head, Henry, "Aphasia and kindred disorders of speech," *Brain*, 1920, 43, 87-165. Head, Henry, *Aphasia and Kindred Disorders of Speech*. London, Cambridge University Press, 1926. 2 vols.

after uttering a word spontaneously the patient may be unable to repeat the word at command.

b. Syntactical defects.

Here the disturbance does not appear to affect individual words but rather their arrangement and meaning in groups or extended discourse. The patient may be able to speak and to make his wants known, but he speaks in a curious jumble of brief phrases. When reading a page, the ideas become so confused and misarranged that the meaning of the page is lost.

c. Nominal defects.

Words are enunciated correctly and in coherent phrases. Disturbance appears in the inability to associate names with objects. It may be possible for the patient to describe an object but not to give its name. Recitation of the alphabet may be possible, but the meaning of single letters be defective.

d. Semantic defects.

This is a disturbance of the meanings of larger groups. Expression may be adequate although the sentences are short and jerky. Use of names for objects is normal. But the understanding of sentences and paragraphs as wholes is lacking. Such a patient may look at a picture and be able to pick out and name the various details but be quite unable to perceive the meaning of the picture as a whole.

From this abstract it must be quite evident that aphasia is primarily a disturbance within the whole cerebral organization for language perception and expression. As such it would be expected to appear in many forms and gradations.

Aside from the speech disturbances attributable to lesions of the central nervous system, it should be recognized that speech is also frequently disturbed by both emotion and fatigue. When one is excited or greatly fatigued, imperfections of speech appear which may be strikingly like those known to accompany morbid conditions.¹

¹ See also the chapter on speech defects.

SELECTED REFERENCES

- Burnham, W. H., "Retroactive amnesia," *Amer. J. Psychol.*, 1903, 14, 382-396.
- Coriat, I. H., "Reduplicative paramnesia," *J. Nerv. & Ment. Dis.*, 1904, 31, 577-587, 639-659.
- Coriat, I. H., *Abnormal Psychology*. New York, Moffat Yard, 1910. Part II, chaps. I, II, III.
- Gilbert, J. A., "Amnesia—the subconscious warehouse," *Med. Rec.*, 1921, 99, 129-133.
- Head, Henry, "Aphasia and kindred disorders of speech," *Brain*, 1920, 43, 87-165.
- Head, Henry, *Aphasia and Kindred Disorders of Speech*. London, Cambridge Univ. Press, 1926. 2 vols.
- Osnato, M., *Aphasia and Associated Speech Problems*. New York, Hoeber, 1920. Pp. 183.
- Prince, Morton, *The Unconscious*. New York, Macmillan, 1914. Chaps. I, II, III, IV.
- Rosanoff, A. J., *Manual of Psychiatry*. New York, Wiley, 1927 (6th ed.). Part I, chap. III.
- Sidis, B., *Symptomatology, Psychognosis and Diagnosis of Psychopathic Disorders*. Boston, Badger, 1914. Chap. XXV.
- Sidis, B. and Goodhart, S. P., *Multiple Personality*. New York, Appleton, 1905. Part II (Hanna case.).
- Stoddart, W. H. B., *Mind and Its Disorders*. Phila., Blakiston, 1912. Chap. III.
- Störing, G., *Mental Pathology and its Relation to Normal Psychology*. London, Sonnenschein, 1907. Lectures on amnesia.
- Stratton, G. M., "Retroactive hypermnesia and other emotional effects on memory," *Psychol. Rev.*, 1919, 26, 474-486.

CHAPTER V

THE PSYCHONEUROSES

PHOBIAS, OBSESSIONS, COMPULSIVE ACTS, PSYCHASTHENIC TICS, PSYCHASTHENIC THEORY (REDINTEGRATION, ISOLATED PATTERN, JANET'S LOWERED PSYCHOLOGICAL TENSION, PSYCHOANALYTIC), NEURASTHENIA, ANXIETY STATES.

Under this heading of psychoneurosis it is now customary to group a large number of what may be called the milder forms of psychological abnormality. Not infrequently they are referred to as borderline cases of abnormality. Sometimes they are called the functional disturbances. They are not as acutely abnormal as those grouped under the general heading of psychosis and which are popularly known as the insanities. The term psychoneurosis may not be entirely satisfactory, but it is the term generally used. In the earlier studies of psychopathology, when everything was supposed to have an organic cause, they were called neuroses. Then came a period when interest developed in psychogenic causation and the term psychoneurotic was coined for the abnormalities which were supposed to have a psychogenic origin in contrast with the neuroses which were supposed to have a purely physiogenic origin. Obviously such thinking assumed a dualism of mind and body. As monistic thinking came to take the place of the older dualism, and as knowledge developed concerning both the so-called neuroses and the so-called psychoneuroses, distinctions between the two groups of abnormalities became less and less possible. The tendency today is very definitely in the direction of dropping the word neurosis and classifying all of these borderline phenomena as psychoneuroses. The terms neurosis and neurotic still linger, however; and the only way to determine what

any particular author means by them is through a careful reading of the context.

Relatively few cases of psychoneurosis are sent to hospitals for the mentally diseased. Consequently all estimates of their frequency based upon hospital admissions are quite unreliable. Their actual frequency in the population can scarcely even be guessed at, although every experienced observer believes that their frequency must be very high. Some forms are so common and so well known that they are popularly thought of as merely the more unusual occurrences in the daily life of presumably healthy people.

The term *psychasthenia* is now generally used to designate the group of psychoneurotic phenomena presented in this chapter: the phobias, obsessions, compulsions and tics. It literally means mentally weak and is therefore a very appropriate word for the purpose. The evidences of this weakness will become more apparent as the different phenomena are considered.

Phobias. These morbid fear states form a good introduction to the whole subject. The writer remembers a well-educated, apparently healthy and well-balanced man whose life was disturbed by a fear of which most of his associates knew nothing. It did not appear in the ordinary course of his daily routine, but let him go for a walk in the park or a tramp over the hills and there might be trouble. Should a snake wriggle across his field of vision, even a harmless grass snake, he would be overcome by all the familiar physiological and mental changes of intense fear. So intense and weakening was the terror aroused that he would be obliged to give up the walk and make his way home as best he could. He knew very well the harmless nature of the snake and the apparent absurdity of his behavior, yet he was quite incapable of controlling himself. A young woman in delicate health, although continuing with her work, suffers a similar affliction. So long as she can keep near large objects or indoors she is calm and comfortable. If she goes along the streets she keeps close to the buildings or hedges or trees.

When she is confronted by the necessity of crossing the open street, even though there be no vehicle in sight, she is disturbed by intense fear, and only by a violent effort at self-control does she manage to keep herself going. Others have a comparable fear of closed places. They cannot sit at ease in a large audience. If they go to such places at all they sit in an aisle seat near the door and hope that the door will be left open. They cannot stay comfortably in a hotel room unless they are sure the door is unlocked. Others have similarly uncontrollable and recognizedly absurd fears of needles, glass, touching anything, dirt, germs, animals, almost anything in fact. They are cognizant of the absurdity or irrationality of their behavior, they are disturbed by it and do their best to get along, but their best is not enough. It should also be observed that while many of the objects, or stimuli, mentioned are under some circumstances proper objects for normal fear, the fear in these cases is out of all proportion to the stimulating situation, and that the knowledge of the sufferer does not have its normal grading effect upon the fear response.

Older treatises on the subject attempted to classify these phenomena in terms of their stimuli and to name them accordingly. The result was a rapid multiplication of polysyllabic terms. The fear of open places was called an agoraphobia, the fear of closed places claustrophobia, the fear of the number thirteen triakaidekaphobia, and so on. By supplying the appropriate prefix to phobia any one of them could be designated, but not, of course, explained. Many of these terms are still in use.

Obsessions. Normal minds often have the experience of a "tune running in the head." Some musical theme recently heard or suggested continues to repeat itself in some form of imagery in the periphery of the conscious field. It may momentarily occupy the focal point, but rarely for long. The person so annoyed may at first be amused, then try to be indifferent and eventually be disgusted. He tries to get rid of it

with little apparent effect. In a little time it disappears, he does not know just when or under what circumstances. A true obsession is like this but in a more aggravated form and does not disappear so readily. A person may have one idea, frequently recurrent, that he has some disease, that he has heedlessly committed some sacrilege, that his hands are really dirty and ought to be washed, that he should kill his father, that everything he does is merely killing time, that nothing is certain and must therefore be doubted, and so on. The variety of these is almost countless. The idea is usually disagreeable. It is persistent. The subject may succeed in moments of severe application in ridding himself of it for a time, but back it comes a little later. It is recognized to be irrational and yet it is as uncontrollable as the phobias.

Undoubtedly the worry of many chronic worriers is of this obsessive nature. There is the persistently recurrent idea of some distressing possibility. The worrier knows that it is absurd to continue thinking of it, but he cannot help it, and the presence of the idea of danger stirs the emotional reaction.

Compulsive Acts. Where the persisting tendency is in the immediate direction of an overt action, it is customarily classified as a compulsive act and not as an obsession. But the distinction between this form and the obsession is frequently very difficult. Obsessions are often such as to find some manifestation in overt behavior; and every student of behavioristic psychology will recall the difficulties involved in drawing a line between behavior which is implicit and that which is overt. But for all ordinary practical purposes the distinction can be and is made.

Examples are numerous. Some have an uncontrollable impulse to touch anything and everything. If they attempt to inhibit it they are miserably uncomfortable. If they give way to it, they are comfortable only until the next impulse to touch appears. Some have a counting obsession or compulsion and are obliged to be counting something almost constantly, fence

posts, telegraph posts, cross lines in anything, so long as it provides release of the impulse to count. Then there is the well-known obsession that one must always approach a door or start upstairs with a certain foot first. If the one so obsessed finds himself approaching the door or the stair with the wrong adjustment he will back up and change so as to approach in a manner which will bring the desired foot first. Others have an obsession for completeness. Everything started by themselves or their associates must be completed in every detail or they are miserable. Many of the too well-known "kleptomaniacs" fall into this class. They have the impulse to grab what does not belong to them. They may not need and they may be quite able to pay, yet they are unable to control the impulse to steal. Occasionally cases are reported of people who have uncontrollable impulses to set fire to something, and they are dubbed pyromaniacs. Usually they are apprehended before many expressions of the impulse take place, although occasionally they do much damage.¹

Psychasthenic Tics. Certain motor disturbances closely allied to the compulsions in nature and yet lacking any appearance of purpose beyond the action itself are separately designated as tics. Usually these involve a very small group of muscles and the amount of movement is rather limited in extent: twitchings of the shoulders, the arms, the hands, certain of the facial muscles, etc., almost any part of the body, in fact. The outstanding feature of these, to be distinguished from a similar phenomenon in hysteria, is that the movements take place only with an accompanying consciousness. The subject thinks of the movement, which he dislikes and knows he cannot control, and the movement takes place. Such a case came into the writer's office some time ago. There was a conspicuous facial tic which made it almost impossible for the subject to

¹ One should not in this connection overlook the suggestibility of such patients. A kleptomaniac or a pyromaniac may easily be made to confess to many more criminal acts than he actually committed.

speaking intelligibly. The writer at once seated the subject and himself turned so that he was almost back to the sufferer. The speech rapidly became clearer and by watching him furtively it could be seen that the tic disappeared. When the writer conspicuously turned again and looked full at the subject the tic promptly returned. Occasionally the motor agitation is more extensive and correspondingly more disturbing. It may reach the appearance even of a mild convulsion. The subject seems then in a frantic state of mind in which much of the musculature of the body is helplessly activated.

In all of these, phobias, obsessions, compulsions, and motor agitations, there are many features in common. The subjects recognize the absurdity or irrationality of their behavior, yet are incapable of controlling themselves, much as they desire apparently to do so, and in all there is a curious and psychologically important feeling of insufficiency or incompetency. Anyone who has been severely exhausted by illness of any kind will recognize the state of mind at once. He will recall the persistence of troublesome thoughts, which he knows to be unnecessary but cannot down, accompanied by a pervading feeling of incompetency which is often quite distressing. With the progress of convalescence all this normally disappears.

Psychasthenic Theory. Theories for the explanation of psychasthenic phenomena are many. First of all should be considered the suggestion (1) that these are but the more or less permanent effect of some especially and exceptionally intense or profound emotional experience — usually fear. This interpretation is especially offered for the explanation of phobias. Ribot tells of a man who was walking backward on the flat roof of a house under the supposition that the balustrade went all the way around and that he would back up against it. He did not know that part of it was missing and that he was backing up to the unprotected edge of the roof. Just at the brink he discovered his mistake and by a violent effort saved himself although overwhelmed by an engulfing fear. Ever

afterward he had a morbid fear of open places. The mechanism assumed by the theory is similar to that in the normal psychology of perception and recognition. Some part of some subsequent situation, because of its similarity to or identity with some item in the original terrorizing situation, activates the whole pattern established by that original experience. This interpretation has been cogently advocated by Hollingworth¹ and is termed by him *redintegration*. In the presentation of this theory it is usually assumed that the personality synthesis is, so far at least as this special redintegrative pattern is concerned, approximately normal. An intense fear experience might thus presumably establish a pattern which could be re-aroused redintegratively in almost any person.

Doubtless many phobias may be traced to some such initial experience, but it must be pointed out that many people have such intense experiences of fear without the consequent phobia. Why should the experience result in a phobia in some cases and not in others? Apparently the theory does not answer this question, and apparently there is some more fundamental cause than the initial disturbing emotional experience.

Another interpretation (2), allied to the one just given and applicable especially to the phobias, proposes that the emotional shock, occurring probably in childhood, resulted in the establishment of a reaction pattern which never became absorbed into the personality synthesis. It always remains a largely isolated side-track pattern, which, when aroused, is consequently beyond the influence of the patterns in the personality organization. The original experience may or may not be voluntarily recallable. Mosso tells of a soldier, whose long and honorable career gave testimony to his courage, who was always fearful of small chapels surrounded by trees. The origin of this was clearly traceable to the efforts of a nurse to make him behave when he was a small child. The nurse had terrified the

¹ Hollingworth, H. L., *The Psychology of Functional Neuroses*. New York, Appleton, 1920. Pp. 259.

child by threats to leave him locked up in such a chapel into which he had just seen a corpse carried. The tactless nurse had terrorized the child into submission and incidentally left an indelible impression which was readily activated years afterward by the same general situation. Perhaps the case mentioned above of the man who had the morbid fear of snakes might be explained in the same fashion although the subject of the phobia was himself unable to recall any such explanatory experience.

This theory apparently serves very well, also, for the explanation of many of the psychasthenic tics. If the personal history in each individual case could be followed out in detail, it might be found that the undesirable movement is but a recurrent bad habit lingering from childhood. That some of the automatisms of childhood fail of inhibition by synthesis is well known. Examples are to be found in the grimaces of the blind from birth or infancy and in the disagreeable reflex noises coming from the throats of the deaf. Careful education of children so sensorily defective may result in the development of a normal functional synthesis into which these automatisms are absorbed, but neglect or ill-advised disinclination to discipline often prevents the normal synthesis. Perhaps some such history will be found in the case of the tics. But for the more extensive motor disturbances and for the obsessions this theory seems scarcely adequate. Perhaps this and the first theory presented should be set aside in a group by themselves as well as all the cases for which they are an adequate explanation. It may be that such cases are fundamentally normal, that the unusual behavior which they manifest is but the product of bad or unfortunate education, and that where these explanations are inadequate there will be found some more profound and pervading defect or disease.

A theory which takes into consideration the whole neuro-psychic condition of the subject has been presented by Janet.¹

(3) He points out that people who suffer obsessions and

¹ See especially *Les névroses* and *Les obsessions et la psychasthénie*.

phobias and these mild motor agitations really differ from normal minds in other ways than in the mere fact of disturbance by phobias, obsessions and motor agitations. The very domination by these disturbing features indicates a defective condition of what is commonly called will. More strictly speaking, there is a marked limitation in the range of willed acts. Inhibition of the phobias and obsessions does not take place, or it is at best inadequate. It is also evident that the subject's attention processes are not functioning normally. Those conditions of attention which would normally eliminate distracting and irrelevant thoughts are not in these instances effective, or are incompletely so. Janet also points to an absence of decisiveness in these patients. They have a somewhat helpless attitude or reaction to the whole situation. Of this and the accompanying feeling of incapacity he makes much. The patient is peculiarly unable to adjust himself adequately to any present situation. This is what he terms a defect in the functioning of the real. Situations and adjustments to them lack the vividness and precision of the normal healthy mind.

Janet is quite genetic, at least ontogenetic, in his thinking. For him this vividness and precision, or completeness of response to present situations, is a matter of progressive achievement. The infant does not adjust so perfectly and completely to situations, nor does the child, but the normal individual develops into a capacity for such adjustment. This complete apprehension of reality in all its forms is a late and high achievement. It may be easily disturbed. Fatigue readily does so and the normal mind may observe the best examples of what approximates the condition which Janet calls psychasthenic when it is fatigued nearly to the point of exhaustion. Then there is a slipping back down the ontogenetic scale to a stage of less perfect apprehension and adjustment with accompanying feelings of incapacity and with anxieties closely approximating the obsession or the phobia. Such a person confronted by a situation which would normally call for the highest tension may re-

spond so inadequately as to manifest motor incoördination of a decidedly tic-like nature. Janet thinks of this as fundamentally a change in what he likes to call psychological tension. White has likened this tension to the flow of water through a pipe under high or low pressure, and, whether or not it corresponds to any physiological facts, it is a happy analogy.

This condition of reduced psychological tension may cause the person who has been normal to fall prey to obsessions, phobias and motor agitations of the kind here described. Or the cause may be more obscure. There may be some weakness of inherent or infantile origin which forever prevents the development of a high psychological tension.¹ Such people have thus been prevented from ever achieving the normal mature apprehension and adjustment to present situations. They are full grown in body but not in this aspect of mental development. All mental processes are present, but they function inadequately or weakly. Whether the condition be adventitious or innate, Janet calls it psychasthenia.

While this theory will explain why some emotionally disturbing experiences result in psychasthenic phenomena and not others, it has been criticized because of its alleged failure to explain satisfactorily the particular form of obsession or compulsion or motor agitation in any given case. The lowered tension and the incapacity for control or for adequate adjustment may be demonstrable, but granting that, why one tic movement rather than another, why one obsessive idea rather than another? This has been the criticism of the psychoanalysts.

The psychoanalytic school have offered a theory (4) in terms of their now familiar postulates concerning the human psyche. They argue that the psychasthenic behavior is the consequence of the imperfect repression of some disagreeable wish. They think of the wish as composed of both an ideational content and

¹ For evidence on the hereditary factor in psychasthenia see Paskind, H. A., "Heredity of patients with psychasthenia," *Arch. Neur. & Psychiat.*, 1933, 29, 1305-1317.

an emotional or affective content. The affective, or, as they call it, the affect, is the attached libido. The whole of the disagreeable wish may be completely repressed. In that case the energy of the affect is expressed in the form of some organic disturbance, an anesthesia or a paralysis. When there is this complete repression and final expression in an organic form the expression is called a conversion hysteria. This will be discussed in the chapter on hysteria. Here we are interested in the results of an imperfect or incomplete repression. In such incomplete repressions the ideational content of the wish is repressed; the incompleteness applies to the energy of the affect. If this energy of the affect is converted, as it often is, into fear, we have a phobia such as has been described and discussed above. It may, however, be merely shifted to another idea, displaced, as it is called technically, and then we have the obsessions and compulsions. Thus the apparent absurdity of the phobias and obsessions and compulsions is accounted for. The real reason is concealed in the unconscious and can be discovered only by psychoanalysis. The puzzling persistence of obsessions and compulsions is due to the emotional accompaniment of some other idea which cannot be recalled; and the overwhelming power of the phobia is due to a strong emotion of perhaps another quality which, because of repression, has been transformed into the phobia. What is feared, and what is thought in obsessions, and what is done in the compulsive acts is said to have some relationship to the repressed material, although that relationship may be somewhat remote and even symbolical and can be discovered only by psychoanalysis.

Brill¹ reports the case of a man who suffered an obsession that whatever he did was merely a case of killing time. It mattered not what the nature of his occupation might be, there would come bobbing into consciousness the thought that he was merely killing time. The thought came insistently and

¹ Brill, A. A., "Psychoanalytic fragments from a day's work," *J. Abn. Psychol.*, 1913-14, 8, 310-321. Case quoted is on page 315.

persistently and caused him much distress. Even in his interview with the physician who was trying to probe the case and discover the cause of the obsession he broke out with the insistence that all the questioning was but killing time. Eventually Brill says he discovered that the man had had an impulse to kill his father. This impulse had been violently repressed (note here the conflict of wishes). The father was an elderly man with a white beard much like the traditional figure of Father Time. Hence, because of the repression the thought of his own father did not return to consciousness in this connection, but the thought of killing time, a substitute for killing his father, did come to consciousness with all the energy originally attached to the thought of killing his father. This was further energized by the intensity of the wish to keep all such ideas out of consciousness. This principle of reënforcement is also a part of the psychoanalytic theory. There was a displacement of the affect to the associated idea, even though the associative connection was somewhat loose or remote.

Such in substance is the case as Brill presents it. For illustrative purposes, however, one could imagine alterations in the story which would make it an example of other forms of psychasthenia. If, for instance, we suppose that all thought of killing was repressed and the patient presented the clinical picture of a phobia for all cutting implements. In that case the psychoanalysts would say that the anger, the affect of the original impulse to kill his father, had been converted into fear of all instruments which would cut. The patient would have failed to see any reason for his fear of knives, as is characteristic of the phobia, but the psychoanalyst would say that the failure to see any reason for the fear was due to a repression and that the intensity of the fear was due to the intensity of the original, and now repressed, wish. Again one might alter the case and suppose that the patient manifested a mania or compulsion neurosis for closing or covering up all cutting implements. So long as the original and repressed wish remains

repressed and unknown the patient would present the usual picture of a compulsive act. He would be unable to comprehend why and he would be equally unable to resist the impulse. The psychoanalyst would say that he could not understand why because the ideational content of the motivating wish had been repressed, and that he could not resist the impulse because of the great amount of affect displaced. On this basis the psychoanalysts divide psychasthenia into anxiety hysterias (phobias) and compulsion neuroses, different only in the degree and efficacy of the repression. The symptoms are thus imperfect or neurotic efforts to adjust to the situation.

In the example just given it may be observed that the phobia and the compulsive neurosis, as well as the obsession with which the case opened, are in a sense protective. They do permit the individual to go on living without committing the crime which was once contemplated, they keep him out of temptation by keeping him away from cutting implements. It has also been shown that some of the energy of the psychasthenic behavior is due to the repressing wish as well as the repressed. If the repressed be stimulated to the point where it may break loose in its true and highly disagreeable form the repression must be greatly reinforced. The reinforcement comes in the form of a defense mechanism. Examples of this may be seen in some people who are morbidly devoted to the cause of antivivisection. Such people are as frantic and irrational in their activities as they are in the acceptance of every and any wild story of alleged mistreatment of animals. When such impulsive and irrational behavior is observed the psychoanalysts think that it may be explained as an elaboration to assist in holding down the poorly repressed desire for the sadistic thrill of causing suffering in others. The avidity with which they read lurid stories of suffering is offered in evidence for the argument that they have a poorly repressed sadism and the violence of their activity against vivisection as evidence for the extra attempt to repress.

It should be further pointed out that the psychoanalysts, and also many who are influenced by them but do not accept all of their ways of thinking, are more and more stressing the *significance* in the psychasthenias of *feelings of guilt*, of insecurity and of inferiority. These it will be at once observed are related to the drives already presented: for sex expression, for security, and for power. Conflict between sex impulses and the super-ego brings feelings of guiltiness; blocking of the drive for security brings feelings of insecurity and fear; blocking of the drive for power brings feelings of inferiority. Out of such disturbances complexes readily develop.

One case has been reported of a woman who suffered a compulsion to house-cleaning. Quite without regard for the actual condition of the house or of her personal health she was driven helplessly by the uncontrollable impulse to clean the house. Careful examination revealed that behind it was a feeling of guiltiness from which she seemed to find some relief in the violent house-cleaning activity. The cause of the guiltiness was not immediately so clear; but the psychiatrist suspected that it must be due to some conflict between the sex drive and the ideals which had gone into the formation of the super-ego. A little intensive study of her history revealed such a conflict. There was a very unpleasant memory which so far as possible was repressed and kept out of consciousness. The facts of the experience and especially of its implications in her present social situation had never been faced and solved. The effort had rather been to conceal and to forget. This maladjustment resulted in the guiltiness and the house-cleaning compulsion which was symbolic of the house-cleaning within her own personality which should have been attended to and was being avoided.¹ In like manner it is assumed that feelings of guiltiness are frequently the motivation for obsessions. The ideas which form the content of the obsession are as unpleasant as the presence of

¹ Brush, N. H., "The psychasthenic reaction," *Amer. J. Psychiat.*, 1928, 8, 565-571.

the obsession itself. These are thought of as punishments desired, or believed deserved, because of the guiltiness feelings. Kleptomaniacs are sometimes interpreted in this same fashion. The uncontrollable impulse to steal is one which if acted on is certain to bring punishment. To the skilled analyst this points to the presence of feelings of guiltiness and the consequent feeling of need for punishment which finds expression in that which will bring punishment. Such cases reveal still more clearly the meaning of the much used term *maladjustment*.

Feelings of insecurity, although presented as the consequence of the blocking of the corresponding drive, may be in part aided by or receive contributions from the blocking of the other drives. Phobias are perhaps the psychologically simplest product of insecurity. The phobia is protective in that it prevents further effort in some direction and distracts attention from the real cause of the trouble. But it is quite possible, as time goes on and the *maladjustment* becomes more and more complicated, for many other forms of abnormality to develop on this as a base.

Inferiority feelings frequently appear as the consequence of the will-to-power drive being blocked by the parents, or by the habits of thinking established by parental training. Against this parental domination there is rebellion and impulsive irrational activity. This appears in the form of compulsive acts. Instances of pyromania have been traced to this blind rebellion against parental domination; and much more frequently have instances of kleptomania been traced to this source.¹ It is obviously possible for such conduct to result in feelings of guiltiness and then there is the possibility of other disturbances growing out of the guiltiness feelings.

In the presentation of these ways of interpretation, it has been necessary to isolate the different factors and to keep the case examples as simple as possible; but human nature rarely

¹ Wittels, F., "Some remarks on kleptomania," *J. Nerv. & Ment. Dis.*, 1929, 69, 241-251.

is so simple nor does it present behavior phenomena in isolation. Complications are ordinarily the rule.

Neurasthenia. Certainly some forms of this condition are to be grouped with the psychoneuroses, and there are those who contend that all forms of it should be so treated. Literally taken neurasthenia means of course nervous weakness; but that is not the whole story. The outstanding feature of it is fatigability. The slightest effort, or sometimes apparently the thought of exerting effort, fatigues. There is no anesthesia but often hyperesthesia. Reactions are nervous and quick. There may be insomnia, and headache, and indigestion and other symptoms. Loss of memory is often mentioned, but quite as often it is observed, and properly, that the fatigued condition prevents adequate attention and so the amnesia is apparent rather than actual, or it might be described as amnesia through defects of impression. Emotional depression is not uncommon. Weeping is easily aroused.

The notion that neurasthenia was the product of overwork was once widely accepted, but is now generally discarded. Fatigue and exhaustion states may resemble the neurasthenic condition but are certainly different in some very significant features. The typical neurasthenic is notable self-centered, almost childish so, and there may be little honest effort to recover. One suspects at once that it manifests an escape reaction. The self-centeredness suggests the narcissism of the psychoanalysts and the possibility of a regression. White holds (*Outlines of Psychiatry*) that neurasthenia is more the product of underwork than of overwork. He argues that prolonged idleness may result in excessive attention to one's self, to an excessively meticulous care for conserving one's energy, to an overemphasis upon every little sensation of fatigue or strain, until eventually such a sufferer from too little labor acquires a fixed idea, an obsession, that he or she is "delicate" and incapable of exerting effort. From this state of mind all the familiar physical symptoms arise as consequences. Coriat has

also presented neurasthenia as a functional disturbance (*Abnormal Psychology*). He says that exhaustion, the physiological condition of fatigue, may produce the fatigue sensations and the familiar disinclination to attempt to work further. But he adds that such a condition is only partially benefited by rest; the idea of fatigue continues after the physiological fatigue has been entirely removed. Coriat's theory is that abnormal fatigue or exceptional emotional experience has produced a functional disintegration which has made possible the fixation of the idea of the fatigue, and this continues after the removal of the physiological causes. For him the idea of fatigue has become partially dissociated.

More recently Wolfe¹ has presented all such breakdowns as escapes from some disagreeable situation in life. The symptoms protect against the necessity of effort where action would be difficult and highly unpleasant. For an invalid, protection (security) is provided and others assume the responsibilities.

It should also be observed that cases beginning as phobias or obsessions, psychasthenias without the neurasthenic syndrome, if permitted to develop unchecked, are known to develop the typical neurasthenic pattern in a good many instances.

Anxiety States. This constitutes a group which cannot and need not be extensively discussed here. They present in general a condition of nervous irritability associated with a rather vague general anxious expectation or apprehension. The familiar physiological accompaniments of fear are usually observable, although they appear to be somewhat schematized or otherwise altered, especially if the condition is one of long duration. Freud has made much of what he calls anxiety neuroses, and, as might be expected, has interpreted them on a sexual basis. He thinks that there are cases in which certain sexual conditions leave a large amount of what might be called unattached or "floating" affect. This becomes attached to

¹ Wolfe, W. B., *Nervous Breakdown*. New York, Farrar and Rinehart, 1933. Pp. 240.

anything and everything with the anxiety condition as a result.

It is doubtful if all anxiety states can be interpreted in terms of the Freudian thinking; but there can be no doubt of the existence of that symptom pattern which has led to the "floating affect" idea. A simple phobia which is at first responsive to a very definite pattern of stimuli, or by redintegration to some part of the original pattern, if uncared for will in the course of time become more generalized in its responsiveness. Stimuli which originally had no part in the effective pattern will after a time come to be effective. There are even instances in which almost anything will arouse the fear and the sufferer is kept in an almost continuous state of anxiety. Some of these anxiety states can also be traced to the existence of obsessions or compulsions in circumstances which block the obsession or compulsion. No doubt a very large number of these conditions of anxiety can be explained in terms of what has been presented above for the other forms of psychasthenia. Perhaps all of them will eventually be so interpreted.

SELECTED REFERENCES

- Culpin, M., *Recent Advances in the Study of Psychoneuroses*. Phila., Blakiston, 1931. Pp. 348.
- Frink, H. W., *Morbid Fears and Compulsions*. New York, Moffat Yard, 1918. Pp. 568.
- Janet, P., *Les névroses*. Paris, Flammarion, 1909. Pp. 397.
- Janet, P. and Raymond, F., *Les obsessions et la psychasthénie*. Paris, Alcan, 1903. 2 vols.
- Leonard, W. E., *The Locomotive God*. New York, Century, 1927. Pp. 434.
- McDougall, Wm., *Outline of Abnormal Psychology*. New York, Scribner, 1926. Chaps. XVII and XVIII.
- Mosso, A., *Fear*. London, Longmans, 1896. Pp. 278.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. 26.
- Ribot, T., *The Psychology of the Emotions*. New York, Scribner, 1897. Part II, chap. II.

- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Chap. VI.
- Stekel, W., *Peculiarities of Behavior*. New York, Boni and Liveright, 1924. 2 vols.
- Stoddart, W. H. B., *Mind and its Disorders*. Phila., Blakiston, 1912. Part III, chap. VI.
- White, W. A., *Outlines of Psychiatry* (7th ed.). New York, Nerv. & Ment. Dis. Pub., 1919. Chap. XVII.
- Wolfe, W. B., *Nervous Breakdown*. New York, Farrar, 1933. Pp. 240.

CHAPTER VI

THE PSYCHONEUROSES (*Continued*)

HYSTERICAL CONVULSIVE SEIZURES, FUGUES, SOMNAMBULISMS, NARCOLEPSY, PARALYSES, ANESTHESIAS, TICS, CONTRACTURES, TREMORS, "HYSTERICAL PAIN," SIMULATION OF ORGANIC DISEASE, CAUSES (MENTAL STRESS, AGE, DEFECTIVE DISCIPLINE, NATIVE ENDOWMENT, MALADJUSTMENT, ORGANIC, SUGGESTION, DISASTERS), CHARCOT'S THEORY, BABINSKI'S THEORY, JANET'S THEORY, PSYCHOANALYTIC THEORY.

Hysteria. To most people hysteria means "hysterics," that fit of uncontrollable laughing and crying so often seen when adolescent girls or neurotic women are overstimulated. But such a limitation of the definition of hysteria should be at once dropped. While "hysterics" is a form of hysteria, it is but one of a very great many forms. A vast number of these forms have been recognized and studied, yet others are either entirely overlooked or are debated. Some day hysteria will doubtless be recognized as a far too inclusive term, but at present it is customary to include within its definition very slight disturbances of normal functioning and all gradations away from these to such conspicuously abnormal conditions as multiple personality. The frequency of hysterical phenomena depends of course upon how inclusive one's definition may be. It is very true that phenomena which one person would call hysterical another might not; but no matter how limited one's definition happens to be, it is even then true that hysteria is a highly frequent phenomenon and perhaps increasingly so. Statistics on the frequency of hysteria are utterly unobtainable or are guesses of the most unreliable nature. Occasionally cases of hysteria find their way to hospitals, many frequent

physicians' offices, but far more never seek professional medical care.

Hysterical Convulsive Seizures. Of the many forms of hysteria these are probably the simplest and certainly they are more likely to come within the observation of the layman than are any of the others. The well-known "hysterics" belongs to this group. In all of these, the subject appears to have been emotionally excited until he or she can no longer control the emotional expression. The result is a convulsive kind of seizure, to be distinguished of course from the epileptic seizure. Sometimes it is a wild spasm of laughing and crying during which the subject is aware of the laughing and crying and may have a vague desire to stop but is quite incapable of doing so. This continues until exhaustion of that mechanism is reached or there is external interference. This dominance of the individual by a motor function which seems definitely related to emotional expression may be almost as various as are the forms of emotional expression. Anger fits in which the subject becomes incoherent, twitching and writhing in rage, are often of a similar nature. Sometimes the very general and pervasive motor disturbance in the seizure makes this emotional interpretation appear difficult, but the seizure becomes intelligible when thought of as the expression of a complex of emotions. Scratching, biting, tearing, crying, moaning, screaming, sighing, may be seen, and if closely watched for the more subtle motor expressions of emotion may be observed in the general ensemble. All are alike aroused by some intensely emotional situation or something in the thought or environment which reminds of that which stirs a great emotional experience. It is of importance to observe also that when the convulsive seizure has passed the subject lacks the exhaustion of the epileptic, proceeds to resume life much as would any one after a bit of emotional interruption.

Fugues. Another form of hysteria which now and then attracts much popular attention through newspaper publicity of

some spectacular case is that known as the hysterical fugue. Instances of people who suddenly disappear and later come to themselves or are discovered many miles from where they normally should be are frequently coming to light. Some of these are without doubt clearly epileptic, some are alcoholic, some are due to physical injury, while others are as certainly hysterical. In some instances the classification may be difficult of determination. The more obvious features are those mentioned, the disappearance, the wandering to some more or less distant place, the continuation in this secondary state for several days, or at times even weeks, then the awakening, and the amnesia for the period of the wandering.

If only these events are considered the similarity to the convulsive attacks just described is not apparent; but if one examines more closely into the events leading up to the fugue and into the condition of patients in the fugue the similarity will be patent. Such an examination will usually reveal that the individual has had a history of nervous instability, of fatigue and of worry brought on by a futile struggle to keep up in spite of a heart-rending series of domestic, professional or commercial troubles. All these troubles and worries and the fatigue condition stirred the normal impulse to get away from it all, to find relief in some other and strange place. This impulse, although frequently aroused by the circumstances of life, was inhibited by ideals which checked an act so cowardly. Eventually the conflict between the impulse to run away and the ideals of life reached the breaking point, a point where the inhibition by ideals was so weakened by fatigue that the impulse to run broke loose and dominated the individual.

This impulse to get away dominates the consciousness and conduct of the individual in this case exactly as the uncontrolled emotion in the convulsive form just described. In the fugue, however, there seems to be no evidence that the individual, while dominated by the desire to get away, has any recollection or consciousness of his past. He is not, however, picked up as

ill or insane, although he may be thought by observers to be acting rather queerly. He is abstracted but is yet able to buy railroad tickets and food and in a limited fashion to care for himself. Eventually the impulse to run, for some reason, probably fatigue, loses its dominating power and then consciousness of the past rushes in and excludes the experiences of the fugue, producing an amnesia therefore.¹

Somnambulisms. This constitutes a group of hysterical phenomena which strikingly resemble sleepwalking. Fugues might be, and sometimes are, placed in this group; but they are treated separately in this text because of their much greater responsiveness to the environment. The true hysterical somnambulisms are admittedly of rare occurrence; but they are psychologically instructive. One of them, as designated by Janet, is the *monoideic*. The term *monoideic* is perhaps not the best which could be chosen because, as will be seen, it is not strictly a matter of one idea, but rather of a closely associated sequence of ideas which follow each other through consciousness with that power of domination so characteristic of hysterical phenomena. A typical case of *monoideic* somnambulism presents the picture of an individual exclusively dominated by a certain closely-knit group of ideas, memories of some highly emotional situation. The reasons for assuming the complete dominance by these ideas are that the subject while in the somnambulistic condition is almost completely unresponsive to external presentations, as unresponsive as one who is highly absent-minded, and also because he acts out, or dramatizes, the ideas with extraordinary fidelity. Each recurring seizure is an almost perfect reproduction of all the preceding. Just as the convulsive patient was dominated by the uncontrolled emotion, and the fugue case by the uncontrolled desire to get away, so this type seems to be dominated in the hysterical seizure by a system of memo-

¹ Good case descriptions of hysterical fugues will be found in the following: Bennet, E. A., "Fugue states," *Brit. J. Med. Psychol.*, 1928, 8, 143-149. Janet, P., *The Major Symptoms of Hysteria* (Macmillan), Lecture III. Ziegler, L. H., "Hysterical fugues," *J. Amer. Med. Asso.*, 1933, 101, 571-576.

ries of some event. When consciousness is so dominated it is a commonplace of general psychology that corresponding action will result.

The case histories contain the familiar items of strain, fatigue, worry and then an emotional experience so intense and so disagreeable that it is felt to be utterly unendurable. It may be properly described as an emotional shock.

Any reference to these horrible events, if sufficiently forceful, will bring on the hysterical seizure. When they are recalled at all they come to consciousness with this dominating and excluding power. When the course of ideas and their enactment is complete the patient may begin at the beginning and do it all over again, but at some completion of the sequence the group of ideas will drop from consciousness and life will be resumed where it was interrupted by the somnambulistic seizure. It is followed by amnesia for the period of the seizure and for the original experiences which gave rise to it, that is, there is a complete amnesia for that group of memories which, when effectively aroused, produce the somnambulism. While it was said above that in such a somnambulism the patient is unresponsive to external presentations, it should be noted with care that communication with the patient is sometimes possible if the communication directly concerns the events of which the patient is apparently conscious during the seizure.

Another form of somnambulism is known, again using Janet's term, as the *polyideic*. In this there is a less rigid confinement to the limited system of ideas. There is instead a loosely organized group of memories associated by the same emotion, all the experiences and events of a certain love affair, for example. For this group of ideas the subject is amnesic, and when they are effectively aroused they, or some portion of them, dominate the subject during the somnambulistic seizure but not with the same exclusiveness of the outside world as in the *monoideics*. Janet places the *polyideic* somnambulism as a gradation between the *monoideic* and the *fugue*.

Hysterical Narcolepsy. Hysterical fits of sleep, so-called, or narcoleptic attacks, constitute a fourth group of hysterical phenomena. There are, it must be recognized, forms of morbid somnolence which are due to definite and fairly well-known organic diseases; but the specialists who study these point out that there are also sleeplike seizures which are to be distinguished both from normal sleep and the several forms of sleeping sickness. The history and the details of the subject's appearance in the sleep seizure soon distinguish them. The duration of such seizures may vary from a few minutes to a few hours. In the seizure the patient falls and lies quietly with the exception of occasional faint mutterings and slight movements of the face as if there were incipient tendencies to smile or to speak. The end of the seizure is like the close of other forms of hysteria: the patient rises and soon resumes life where it was interrupted, with amnesia for the events of the seizure. The history reveals a condition of weakness culminating in some excessively intense emotional experience in which death was expected or devoutly desired, or the emotional experience might have been concerned with the ideas of sleep or fainting. Now when those memories are aroused they come to consciousness with a rush, with that all-dominating effect with which the reader is familiar and the result is that the subject enacts the idea of death or sleep or fainting. It is thus in essence quite like the monoideic somnambulism already described. Janet reports that he has even been able to communicate with the patients in this form of seizure. When he had learned by studying their past the probable nature of the events which led to the disturbance and hence the probable nature of the thoughts which dominated during the seizure, he could by assuming a part in those events actually communicate with the patient in the seizure. The form of such communication was by slight movements of the eyelid or claspings of the hand.

Paralyses. In the forms of hysteria so far presented, an amnesia for certain events of the past has been frequently noted.

So far the amnesia has been for certain ideas or groups of ideas. It will now be observed that there are hysterical forms in which the outstanding feature is the dissociative amnesia for certain motor and sensory functions. Hysterical paralyses are often reported. Patients are described who have paralyzed arms, or hands, or legs, or are unable to speak. Apparently any functional muscular group may suffer this kind of paralysis. Such paralyses manifest certain striking peculiarities. A hemiplegic man may be found walking about in his sleep, even climbing into dangerous places; paralyzed arms or hands will be used readily when asleep or in moments of distracting danger. While in organic paralyses there is a disturbance or loss of the reflexes and a tendency to atrophy, no such disturbances are present in the hysterical paralysis. In fact, the very normality of the reflexes is usually used as one of the differentiating indications for hysterical paralysis. The patient suffering an organic paralysis does his best to make use of the affected limb; he tries to appear as nearly normal as possible. Quite other is the behavior of the hysteric, for he will entirely ignore the affected part. If it be a leg he will let it hang and drag without the normal effort to make the best possible use of it. And again, strangely enough, he seems not to be especially distressed by the paralysis. He may enjoy being fussed over and examined, as is quite common to hysterics. He is apparently quite absorbed by everything else in life and equally ignorant of, if not amnesic for, the function of that affected limb or muscle group.

Anesthesias. Closely allied to the hysterical paralyses are the hysterical anesthesias. The forms of these are at least as numerous as are the sense modalities and probably even more so, because not infrequently cases are reported where there is, curiously enough, anesthesia for certain qualities within a given sense modality. Blindness has been frequently reported in which no diseased condition of the eye or nerve tract could be discovered and in which the physical reflexes remained quite normal. War cases have been reported in which there was as

sudden a recovery of the vision as there had been a loss of it. In some instances the blindness is incomplete, the field of vision being retracted to a very small area; in other cases the patient may be found to be blind for certain colors and not for others, and that his loss of color sensitivity does not at all correspond to the usual facts of color blindness. Similar defects of hearing are reported. Such cases may be quite deaf, baffling every trick to detect malingering, and yet be disturbed at night by the crying of infants or the sighing of the wind. Comparable cutaneous anesthetics are quite common. A curious and significant feature of these is that the anesthesia does not correspond to the distribution of the sensory nerve for the involved area. For example, the anesthesia may be confined to the hand, stopping at a straight line running around the wrist, or it may in like manner be confined to the whole arm, stopping abruptly at the shoulder, or it may be of some other portion or portions of the body, but in every case it corresponds in extent to the subject's ideas of anatomy rather than to the facts of nerve distribution. Such anesthetics are commonly referred to as "glove anesthesia." Internal anesthetics are also known. A patient may, for example, never be conscious of a hunger sensation and as a consequence never feel the need of eating. Or he may have no sensations of fatigue, and so wear himself out with prolonged activity. Again it should be pointed out that in all of these the reflexes remain normal and hence there is ample evidence that the sensory end organs and nerve tracts are intact. The trouble is evidently of a psychological rather than an organic nature.

Tics, Contractures, Tremors. Perhaps these could have been included under the convulsive group above, because they are like the convulsive phenomena, only that they are confined to a single muscle or a small muscle group. While they seem not to be quite so common, yet because of their nature they deserve the psychologist's consideration. Little twitching movements of the facial muscles, of the shoulders, arms, hands, legs, feet,

eye muscles, and, in fact, almost any functional group, may here and there be found reported as contracting spasmodically and associated with a history which leads the examiner to suspect it of being hysterical in nature. Sometimes they are associated with more conspicuous hysterical seizures, are apparently portions of more elaborate muscular activities which appear to the full in the seizure and in this reduced form between the seizures. Toward such disturbances will be found the familiar hysterical reaction of indifference and amnesia. If attention is attracted to them they can be stopped. They seem to function primarily apart from consciousness; and in this it will be noted that they are distinctly different from the psychasthenic tic. Forms are reported where the motor disturbance is reduced to a mere tremor, but with the usual associated circumstances which reveal it to be hysterical. Again and more often there are chronic contractions of some muscle group which may be very misleading. Such contractures may disappear during sleep or under marked distraction and so remind one of the peculiar behavior of the hysterical paralytic.

"Hysterical Pain." A psychologically curious phenomenon is the so-called "hysterical pain." There are patients who complain of what they call pain which upon careful examination does not behave as do pains of organic origin. The areas from which these pains are elicited or appear to come do not correspond to the known distributions of the sensory nerves; and the painful areas are quite variable. From time to time the examiner may be bewildered upon finding pains coming now from this place and now from that, for no apparent reason. Their variations of intensity are equally unphysiological. The unsuccessful search for possibly painful points or areas in one examination may be followed by the appearance of pains in those places in the next examination. They appear to have come into being as a consequence of the suggestive effect of the previous examination. And suggestion may be likewise effective in removing these pains.

It is customary to term them "hysterical pains"; but of their actual psychological nature little is known. One wonders if the sufferer actually has a sensory-like experience of pain quality or if it is the persistent presence of an idea of pain. Perhaps both occur. In either case the behavior is much like that of the obsessions, and thus they might have been termed psychasthenic pains. There is the persistent presence of a process over which the subject has little if any voluntary control. This is not like the repressed and dissociated phenomena of the hysterias, nor is it like a hysterical seizure. But these pains do behave in some respects like hysterical anesthetics. If the hysterically anesthetic is distracted by close attention to something else, stimulation of the involved area produces normal reactions. If the person with the so-called hysterical pain has attention distracted to other things, stimulation of the involved area does not produce the pain reaction. Perhaps then it would be better to term these psychoneurotic pains; but the term hysterical pain has become so well-established its present usage is likely to continue.

Simulation of Organic Disease. It is desirable now for the reader to look back and fully realize the many varieties already mentioned of hysterical manifestations. Convulsions, fugues, monoideic and polyideic somnambulism, fits of sleep, paralyses, anesthetics, tics and contractures, pains, in most of them amnesias, in all of them an indefinite possibility of varying degrees and forms — so many are its forms it is not surprising that hysteria has so often been called the proteus of pathology. With all of these and the many possible combinations in mind one can easily understand why the medical profession are constantly on their guard against mistaking an hysterical disturbance for an organic disease; and it is also easier to understand why so many medical men cordially dislike all hysterics and hysterical behavior. They are, however, for that very reason, important. Janet says of them that hysterical diseases are "badly characterized from the physical point of view, and that

they are uncommonly similar to all kinds of medical or surgical affections, for which they are easily mistaken. Contractures, paralyses, anesthetics, various pains, especially when they are seated in the viscera, may simulate anything; and then you have the legion of false tuberculoses of the lungs, of false tumors of the stomach, of false intestinal obstructions, and, above all, of false uterine and ovarine tumors."¹ When so great a specialist says that hysteria may simulate anything it is worthy of special attention. It means that we not only have in the simulation a psychological problem of no mean importance, but it also points to the possibility that hysterically simulated disease may be the basis for many of the remarkable "cures" so frequently reported.

While hitherto the distinction from organic disease has been emphasized it must be also recognized that there is often a very close relationship between organic disease and hysterical phenomena. Not infrequently the two are combined. There are many reports of organic diseases accompanied by hysterical disturbances, that is, the hysterical phenomena are superimposed upon an organic base. Sometimes the hysterical phenomena follow the organic. Instances are reported of traumatic and inflammatory conditions which disturbed some motor function or for treatment necessitated immobilization and yet after all organic reason for absence of motor function had passed the immobility continued. Careful investigation revealed that the organic disturbance had merged into an hysterical disturbance. Yet more disturbing combinations are possible. Genuine hysterical phenomena may be combined with epileptic phenomena and even also with other of the psychoses. Such combinations require of course the

¹ Janet, P., *Major Symptoms of Hysteria*, p. 12. (Copyright 1920 by The Macmillan Co. Quotation reprinted by permission.) See also Weitenburg, T. H., Yaskin, J. C. and Pleasants, H., "Neuropsychiatric counterfeits of organic disease," *J. Amer. Med. Asso.*, 1931, 97, 1751-1757. Wholey, C. C., "The menace of mental factors in bodily diseases," *J. Amer. Med. Asso.*, 1930, 95, 1073-1076.

utmost skill in diagnosis and usually prolonged observation.

Causes. The causes of hysteria contribute much to the understanding of its nature. Of these the *mental stresses* of life are always mentioned as outstanding. Again and again one reads of the death of a relative or loved one as being a most conspicuous factor in the production of the particular hysteria. Disappointments in love, desertions, seductions, the presence of apparently insuperable obstacles to the fulfillment of love — all of the love tragedies of life are to be found in the history of hysterical cases. Strained marital relations and domestic infelicities of many kinds are often contributory if not exciting causes. The disappointments of life, the thwarted hopes and ambitions, business cares and worries of multitudinous forms, undesired and irksome responsibilities, fears for the health of the self or of loved ones — all these and many more of a like nature which could be named are the sort of experiences in life which make it seem unendurable, which result in emotional excitement, in worry and fatigue and hopeless rebellion and which so often end in hysteria.

Age is for a variety of reasons a significant factor. While hysterical phenomena are often reported in childhood years, still they are not then so frequent as later. Life for the child does not contain so many stresses and strains and those which do come are taken more lightly because of the limitations of childhood's perception; they do not have the significance for the child that they do for the youth or the adult. The instability of the teen age is well known, and because of it the emotions are easily and intensively aroused. Inhibitions are poorly established and so are relatively ineffective. Thus when the stresses and strains of life come in adolescent years disturbances are easily brought about. With the advent of maturity come the possibilities of even greater troubles and disappointments. Those incidents of life which have been mentioned above are obviously the incidents of life most likely to occur in

adolescence and early maturity. So it is not surprising to find the statistical presentations indicating that hysteria is most likely to occur in the later years of development and during the earlier years of maturity. Such disturbances do come later in life, but with decreasing frequency. With the advent of post-middle life and of old age human beings become so habit hardened or are socially so protected that the stresses and strains of life have less effect.

Defective discipline is frequently reported as a probable contributing factor in the production of the hysterias. Good discipline contributes much to the establishment of self-control. It apparently aids in the establishment of such a cerebral organization that there will be a minimum of isolated functioning at any level. Lack of good discipline might easily contribute to the development of habits of isolated functioning, to a minimum of control and of gradation of response, in the higher levels of functioning at least a decidedly weak synthesis. It is unfortunately true that many individuals grow up in home and school environments which seem best designed for the development of poor control. Such individuals must suffer the consequences of a defective training in discipline. The child brought up by educational faddists who completely spare not only the rod itself but also all other forms of discipline, permitting the child to grow up without the establishment of inhibitions, is almost certainly destined to a loose organization and to hysterical behavior. Children permitted to have uncontrolled fits of temper are being educated for abnormality. Children who are over-protected, whose every want is supplied, may suffer a defective disciplinary training and thus lack the control which militates against the appearance of hysterical development. Likewise, children who are under-privileged, who lack the training of good home and school and play-time environments are in danger of growing up with a defect of personality organization, a defective control.

It is said by some specialists that artists are by virtue of

their education, if not of their temperament, more subject to hysterical phenomena. The argument is that the life and work of the artist is one of unrestrained emotion, and the lack of inhibitions or the lack of a stable synthesis of all functions is the known groundwork for hysteria. Wagner, for example, tells in his autobiography how he deliberately permitted every wave of emotion free play to dominate him as it would. Such people must of necessity be easily irritated, easily annoyed, hence come the conflicts of hysteria.

The factor of *native endowment* in the production of the hysterias, and of all the psychoneuroses, is still a debatable subject. It has frequently been held that there is a psychological type of person in whom the hysterias most easily, or perhaps exclusively, develop. In recent years this has been identified with the extrovert type of Jung. Many, however, question if this be an intrinsically determined type and it appears also to be certain that hysterias do develop in those not classed as extroverts.¹ It has also been contended that persons are born with a native predisposition toward nervous disease. This is customarily referred to as a neuropathic diathesis. The thought is that inheritance in families afflicted with nervous and mental disease is not in the nature of a predisposition to any particular disease but appears as a general nervous weakness upon which as a basis any form of mental abnormality may develop. Concerning this we have some carefully collected evidence.

It is now known that the abnormalities occurring during the war and popularly known as "shell shock" were really psychoneuroses, a large proportion of them hysterias. Wolfsohn² made a careful study of these in which he compared the histories of one hundred war neurosis cases with one hundred cases of somatic injury, using the latter as a control group. His

¹ Van der Hoop, J. H., "Psychology and hysteria," *Arch. Neur. & Psychiat.*, 1930, 24, 324-334.

² Wolfsohn, J. M., "Predisposing factors of war psychoneuroses," *J. Amer. Med. Asso.*, 1918, 70, 303-308.

tables show evidence of nervous instability in the personal histories of 76 per cent of the war neurosis group while the same is found in but 12 per cent of the somatic injury group. In the family histories evidence of nervous instability was indicated in 74 per cent of the war neurosis group and in but 38 per cent of the somatic injury group. It is therefore clear that in many cases the strain of military life was supplemented by some predisposing factors; but it is also clear that men with a completely negative history did succumb to the strain and suffer a conversion hysteria or an anxiety state. One is therefore forced to the conclusion that hysteria is far from being entirely dependent upon an inherent nervous weakness.

There was a time, as the very etymology of the word hysteria itself indicates, when it was supposed to be a purely female disease. Later it came to be recognized that similar phenomena were to be observed in males. Then studies were offered in an attempt to determine the relative frequency of hysteria in the sexes. Most of these are unreliable because of the uncertainty of diagnosis and the great differences of opinion concerning classification. Theorists tried to convince us that the nature of a woman's life left her inevitably more unstable and so more prone to hysteria. Today the notion of sex difference as a factor in hysteria is apparently disappearing, although the sex function and all related thereto is rising in the degree of its importance as a cause of hysteria.

Race peculiarities have also been picked on as causes. It is popularly supposed that the southern European races are more unstable and, as such, more prone to hysteria. While there may be some basis for such thinking, still it must not be forgotten that mere instability is not the only cause of hysteria and that the forms of hysteria are multitudinous. The greater reserve of northern peoples may cover quite as acute reactions to the social and economic affairs of life, resulting in quite as much stress and strain. There is still lingering a popular notion that hysteria is a French disease. The extensive studies of

hysteria among many other peoples should be sufficient to allay such an absurdity about the French, although it is true, and to their credit, that they have made many and brilliant studies of borderline mental phenomena.

There is now much reason for thinking that the appearance of hysteria and the other forms of psychoneurosis is related to the degree of intelligence and to the associated achievement of knowledge and ideals. Hollingworth¹ has reported the intelligence test scores of a large group of psychoneuroses obtained in a hospital for mental cases during the World War. The average mental age in each of the diagnosed groups was as follows: Hysteria 11.9, Neurasthenia 13.0, Psychasthenia 14.9. And it will be recalled that the average mental age for unselected army recruits was 14 years. Thus it appears that persons in the lower ranges of intelligence are more likely to develop the hysterical forms of psychoneurosis and those in the higher ranges are more prone to the psychasthenic forms.

This experimental work is supported by the clinical observations of war psychoneurosis cases. It became the practice of the clinicians to distinguish between two forms of "shell shock." One was known as the anxiety states and the other as the conversion hysterias. The term anxiety well describes the first group. It was one of phobias, worries, anxieties, obsessions, and the like. The conversion hysteria group was by contrast composed of the hysterical paralyses, anesthetics, losses of voice and hearing and vision, contractures, speech disturbances, and so on. The anxiety states were found to occur much more frequently among the officers as a class and the conversion hysterias were found more frequently among the enlisted men. While distributions of intelligence for these two

¹ Hollingworth, H. L., *Psychology of Functional Neuroses*, p. 88. This finding was not supported by a later study made on civil cases, but unfortunately this later study was made on a much smaller number of cases and with a selection which possibly affected the results. See Tendler, A. D., "The mental status of psychoneurotics," *Arch. of Psychol.*, 1923, 9, No. 60. Pp. 86.

groups would no doubt show some overlapping, nevertheless, as a group, the officers were men of higher average intelligence, of more education, and were in positions of responsibility which brought a heavier influence of their ideals upon the form of disease reaction. The clinical studies have reported the influence of escape motivations in both forms of war psychoneurosis; but they have also shown that the education and ideals resulted in a different form of the escape motivation¹ and consequently the one produced more of the hysterias and the other more of the psychasthenic form of psychoneurosis.

The case histories of those suffering hysterical behavior now usually reveal illuminating instances of *maladjustment* and its consequences. There may have been the necessity, for example, of facing circumstances in life which stirred to an aggravated degree feelings of inferiority continuing on to the development of an inferiority complex. Parents and teachers sometimes expect far more than the individual is by nature capable of achieving. Again it may be that false outlooks on life have been established which contribute to the development of maladjustments. Habits of escape become established instead of the more hygienic habits of facing life situations squarely. Mother and father fixations appear in the case histories with their associated complexes. Sexual delinquencies, actual and imagined, contribute their share. Frequently mistaken ideas of sex anatomy and physiology acquired from unreliable sources lead to fantasy thinking, feelings of guilt, and the associated maladjustments. Conflict and complex and thwarted wish and fantasy thinking and feelings of guilt will usually be found in the immediate background of hysterical behavior. Some think that they are always there.

The possibility of finding an *organic cause* for hysteria has been to many an alluring quest. Some few physiological find-

¹ The escape wish producing psychasthenic phenomena was a wish for death; while the escape wish which resulted in the conversion hysteria phenomena was a wish for some form of physical disability which would take the soldier out of the distressing situation.

ings have been picked on and pointed to as possible causes. But the advancing knowledge of the physiological disturbances involved in emotion make it seem clear that such findings are the consequence of hysteria and not its cause. Ideational conflicts or processes stir or release emotional activity and that in turn produces the physiological change. It is quite true, however, and worthy of constant consideration that depleted physical conditions of whatever nature lay the groundwork for hysteria or at least make the subject more liable to hysterical behavior. Prolonged illness, illness which makes the realization of some ambition impossible, illness which stirs fear for the welfare of loved ones dependent upon the sick person for support, illness coming into the life of a person who knows only the experiences of good health and thus arousing feelings of inferiority, illness which stirs the fear of death, whether justifiably or not — all such are definite and well-known causes of hysterical phenomena.

Suggestion has been thought by some to be not only a cause but the chief cause and essential nature of hysteria. Hysterics are highly suggestible people and it has been found that not infrequently hysterical symptoms in a given case have been produced by crude methods of examination rather than by the original condition producing the particular hysteria. In seeking anesthetic areas the very technique has suggested to the patient that they should be there and so they have appeared. The same has been true in the discovery of hysterically retracted fields of vision, a function exceedingly difficult of examination without introducing the possibility of suggesting the abnormal. Cases have been reported where the particular form of hysterical behavior seems to have come by suggestion from some epileptic, paretic, or other diseased individual with whom the hysteric happened to be associated. The suggestion factor is perhaps to be encountered more commonly in the sporadic outbreaks of hysterical contagion. Typical of these are the famous hysterical phenomena of the Kentucky revivals.

Davenport¹ has given us an excellent collection of first-hand reports of how the "jerks," barking phenomena ("treeing the devil"), hysterical convulsions and other forms spread rapidly through the crowds attending these revivals. Several instances are reported of the spread through school systems of hysterical contractures which were stopped by treating them on the theory that they were purely suggestive in origin. The phenomena called "getting the power," still often to be observed in the campaign meetings of faith healers, is largely induced by suggestion, although strongly supported by active expectation.

Any discussion of the causes of hysteria should always be supplemented by a recognition of the aggravating effect of a *great disaster* or anything that stirs the emotions of many in a community. It must be clear to the student by this time that there are constantly in any community a considerable number of people who are at best unstable. There are the nervous, the worried, the youthful, the badly educated, the sick, the artistic, the disappointed, the maladjusted, the anxious, those whose tempers are badly if ever controlled, and the many who have already some mental disease in its incipient stage. Many of these get along without any serious outbreak or conspicuous disturbance so long as the general social situation remains steady. But let the general social situation be disturbed, let anything occur which stirs especially the feeling of insecurity, and there will be at once a conspicuous increase in the number of hysterical cases. A great fire, a devastating flood, a destructive earthquake, becomes thus peculiarly tragic. The declaration of war, the enlistment of loved ones, the consequent disturbance to business and professional and family life — all is productive of much hysteria where otherwise there might have been little. It is to be noted also that the increased responsibility thrown upon some persons at such times occasionally has a stabilizing effect.

¹ Davenport, F. M., *Primitive Traits in Religious Revivals*. New York, Macmillan, 1905. Pp. 323.

In a smaller way much hysteria is produced in a community by those campaigns which arouse intense emotionalism. Religious revivals associated with faith-healing campaigns skillfully led and advertised, producing dissensions in the local churches, open and constant controversy, the suggestibility of the frequently recurring crowd situations and all, produce hysteria almost as readily as the more conspicuous disturbers of social tranquillity.

Of theoretical explanations for hysterical phenomena there have been a great many. At the present time two lead the field, those of Janet and of the psychoanalysts; but it will probably be well to consider along with them the historically famous theory of Charcot and one other, that by Babinski, because of its historic position and because it brings so forcibly to attention certain fundamental features used by the others.

Charcot's Theory. The earlier French specialists in mental diseases, led by Charcot,¹ attempted to describe a typical course for a hysterical seizure. This they found in what is often referred to as hystero-epilepsy because of certain marked similarities to an epileptic seizure. It was described in terms of a sequence of stages: 1. Prodromal, in which there appeared emotional disturbances and often an aura of some sort; 2. Epileptoid stage, characterized by elaborate motor disturbances and agitations; 3. Period of clownism, in which the patient manifested a variety of apparently absurd movements more systematized than in the second stage; 4. Period of mimicry or of emotional expression, characterized by certain silly movements more intelligible to the observer and probably indicative of a returning consciousness. Such a course was supposed to be the typical hysterical seizure, was everywhere sought for and frequently found, but it was clearly recognized that many variations from this typical form were to be observed. The early Charcot school considered the disturbances of sensibility, although not so immediately apparent as other features, to be

¹ See article by Charcot under the heading Hystero-epilepsy in Tuke's *Dict. of Psych. Med.*, p. 627 et seq.

the most constant and the most typical of the symptoms. They included here not only the anesthasias and hyperesthesias, but also the hysterogenic points and points which if touched would bring about a cessation of the disturbance.

The student who has carefully studied the list of forms of hysteria presented in the early part of this chapter will recognize or guess that the stages of Charcot's typical seizure are but a combination of many different forms of hysterical behavior. This eventually came to be recognized and there also came a recognition that the emphasis upon sensory disturbances as the most distinguishing feature resulted in the development of those features by suggestion where they never would have appeared otherwise. It should be unnecessary to add that the typical Charcot sequence is practically never seen today.

Babinski's Theory. It was Babinski,¹ who not only demonstrated the suggestive and non-essential nature of the anesthasias and hyperesthesias, but argued that the hysteria should not be defined in terms of a typical course of symptoms but in terms of what he considered to be its most salient characteristic, i.e., suggestibility. He differentiated between what he termed primary and secondary disturbances. By primary, he indicated the now familiar hysterical phenomena already described, and by secondary he indicated circulatory, trophic and other organic disturbances consequent to the hysterical conditions. Babinski used the term suggestion to mean the acceptance of, or realization of, an idea which was manifestly irrational, a somewhat more limited use of the term than is common today in general psychology. He furthermore insisted as another characteristic of hysteria that the disturbance could be removed by persuasion, which he defined as the presentation of an idea which was reasonable or which at least did not shock the reason. Removal of a symptom by confidently telling a patient that the disturbance in question would disappear would

¹ See as a very accessible presentation of his point of view his paper in *Alienist and Neur.*, 1908, 29, 1-29.

be an example of persuasion. This led to the coinage of the term "pithiatism," meaning curable by persuasion, still occasionally to be seen in the literature.

It is to Babinski's credit that he saw through the welter of discussion of particular symptoms the one fundamental feature, suggestion. He saw, too, that the symptoms were often brought about by the modes of examination and that the many stages of Charcot's "grand hystérie" were in far too many instances the suggested product of hopeful anticipation. His distinction between suggestion and persuasion seems to be an unsuccessful attempt at refinement, for both are obviously suggestion. Babinski was, however, led to an emphasis upon suggestion so exclusive as to lead him astray. He greatly minimized in his discussion the place of emotion in hysteria and that, we shall see, was a grave omission. And while he was undoubtedly right in saying that symptoms are often suggested to patients, systematic studies have revealed many instances where the particular form of hysterical phenomena could not be the product of suggestion.¹ Thus the form of the hysterical phenomena in any given case yet remains to be explained. We have only from Babinski the important fact that hystericals are peculiarly suggestible, but where the line should be drawn between normal suggestibility and abnormal suggestibility is not clear unless it be at that vague point of demarcation between that which is and that which is not manifestly rational.

Janet's Theory. Pierre Janet has made ample place for suggestibility in his conception of hysteria and has done much for the explanation of the particular forms of hysterical behavior. For him there is a peculiar hysterical personality which is the basis of hysterical disturbances. This hysterical personality is characterized first of all by what he calls an imperfect, or reduced, synthesis. This functional synthesis in the normal personality reaches a high degree of integration and is not easily disturbed. There are, however, individuals who, be-

¹ See references at end of chapter to Wilson and Diller.

cause of some condition not very well known, inherent or adventitious, never develop a normal synthesis. These are the personalities in whom psychasthenic and hysterical phenomena easily develop. It is possible also that fatigue or exhaustion or great emotional disturbance or a combination of these may weaken a synthesis which had previously been quite normal. Those with a weak or weakened synthesis may get along very well if the demands of life call only for lower level functioning, but they are incapable of adequate functioning at the higher human levels.¹

Janet also assumes that the hysterical personality is characterized by the presence of a chronically retracted field of consciousness. The hysterical personality is then always somewhat absent-minded. This will at once be recognized as Janet's way of recognizing the suggestibility of the hysteric, for, as every student of psychology knows, a retracted field of consciousness means a heightened suggestibility. Other features of the hysterical personality are allied to these two. Janet speaks of the changeable and puzzling character of hystericals, how they manifest such bafflingly contradictory traits of character; and how they seem to be victims of abulia, an inability to will effectually, which results in their being more than is usual for human nature the creatures of impulse.

With this conception of the hysteric personality in mind one may readily approach Janet's conception of a given hysterical disturbance. He finds that the hysterical personality has been subjected to some intense emotional experience. This emotional experience further weakens the synthesis, as may be evidenced by an almost fainting condition of the subject; and also causes a partial break-up of the synthesis, the almost complete dissociation or ejection from the synthesis of the events

¹ For further elaboration of this level concept see either of the following: Bailey, P., "The psychology of human conduct; a review," *Amer. J. Psychiat.*, 1928, 8, 209-234. (This is an abstract of a series of lectures by Janet.) Kretschmer, E., *Hysteria*. New York, Nerv. & Ment. Dis. Pub. Co., 1926. Pp. 120.

of the disturbing emotional experience. This dissociation is his theoretical explanation of the amnesias already described in the presentation of hysterical phenomena. The reckless hysterical who hung off the side of a railroad train experienced an intense fright when he turned and discovered that they were just entering a tunnel and that one side of his body would in an instant be crushed by the edge of the tunnel. Friends pulled him to safety just in time. But when he recovered from the daze of the situation he found that side of his body paralyzed. All the usual indications of hysterical paralysis were present, the indifference, the amnesia, the complete inability to function unless asleep or completely absorbed. Such an hysterical paralysis is in Janet's terms due to the dissociation from the functional synthesis of all related to that side of the body. The same explanation applies to the paralyses of lesser extent, of arms, hands, legs, or voice. The individual can no longer voluntarily move the involved portion of the body because he cannot think of so doing. Exactly as the individual who is totally ignorant of music is unable to play a sonata because he cannot image even the first movements of so doing, so the hysterically paralyzed is unable to think or to will movements of the involved portions of the body. The already noted features of indifference and lack of all effort to use such paralyzed limbs are the obvious consequences of the amnesia for all that concerns those limbs. When an anesthesia accompanies the paralysis it is explainable in the same terms as the paralysis, i.e., the patient is unable to receive into his personal consciousness sensations from the affected part because all that concerns the part is dissociated. And if the anesthesia be not an accompaniment of a paralysis the same explanation holds, the patient, because of his retracted field and weakened synthesis, has suffered a dissociation for all sensory experiences involving the given area.

When translated into terms of amnesia the phenomena become more intelligible. Not only might one be amnesic for

the sensory experiences of a given area or a particular sense modality, but one might be amnesic also for certain qualities within a modality. A case was mentioned in an earlier part of the chapter in which the patient was anesthetic (amnesic) for the color red but quite able to sense all others. That many of these anesthetics have been the product of ignorant or crude examination by physicians who suggested and thereby produced what they sought becomes also intelligible. The patient is highly suggestible, that is, he has a chronically retracted field of consciousness, is habitually indifferent or inattentive to processes and functions which would not escape the attention of the normal mind and he has a poorly synthesized organization, one which easily suffers dissociation. As a consequence of these conditions the suggested amnesias (anesthetics) are readily produced and readily moved from place to place or even dissipated.

The tics, the contractures, the tremors, Janet finds also explainable in the same terms. For all he finds the now familiar indifference, the amnesia; and he finds that they are related to the group of ideas or memories which have been dissociated. The dissociation, it should be observed, is not merely for the tic or contracture and its accompanying ideas, but also for the sensations involved. No healthy person could keep up such movements or contractures without marked fatigue, but the hysteric does not experience such fatigue. For the finer movements, Janet suggests a possible degeneration of functional patterns as a consequence of dissociation.

The hysterical seizures, the convulsive attacks and somnambulisms, are a consequence of this hysterical personality, the emotional disturbance and the dissociation; but the interpretation involves a little further elaboration of the theory than has so far been presented. Granted the dissociation, which may or may not include a paralysis or anesthesia or a contracture, then it further appears that the dissociation is not absolutely complete. There is ample evidence of the existence of

some, albeit rather narrow or weak, connection between the somewhat decimated personal synthesis and this dissociated material. Such evidence is to be found in the seizures and their production. Occasionally something will seem to stimulate this dissociated material, to cross that narrow bridge, whatever it may be, and arouse it into activity and with it all the intense emotional accompaniment with which it was originally accompanied. When so aroused the dissociated material comes in to dominate consciousness. Apparently there is some connecting link, which for some reason is not easily stimulated. Perhaps the vagueness here indicates an incompleteness in the theory.

The obvious serviceableness of this theory of Janet's, as well as its recognition of the many psychological features involved, has earned for it a wide acceptance. It is clearly more complete than Babinski's and is alluringly systematic. While many have been ready to accept, others have criticized. The burden of the criticism falls on what is thought to be a failure to explain the particular form of a given hysterical disturbance. Why, for instance, should a given case develop a paralysis rather than a contracture? Why, again, should an hysterical anesthesia follow a traumatic anesthesia, as sometimes happens, or why should an hysterical paralysis follow a therapeutic immobilization. It is difficult, if not impossible, to explain merely in terms of the dissociating effect of an emotional shock. The emotional shock seems in many cases not to be discoverable.¹ Such criticisms, especially of the particular form of the disturbance, are the weapons of the psychoanalysts, and it is their theory which must now be considered.

Psychoanalytic Theory. For the interpretation of hysterical phenomena the psychoanalytic theory is, in its main outline,²

¹ For summary of criticism see Wilson reference at end of chapter.

² The limitations of space unfortunately prevent the presentation here of anything more than the general scheme of psychoanalytic thinking concerning hysteria. The many modifications and special developments are of necessity omitted.

but an expansion of that which has already been presented for the interpretation of psychasthenic phenomena in the preceding chapter. There is usually the assumption of some sort of intrinsic weakness or defect. But still more important is the psychogenesis of the personality manifesting the hysterical behavior. This is thought to have suffered much more distortion in development than did the personality of the psychasthenic manifesting the obsessions and phobias and tics and compulsive acts. The course of sublimation is presented as having been interrupted at some stage and a fixation established. This might be an autoerotic fixation or it might be a fixation at any of the other stages: narcissistic, parental, or homosexual.¹ As a consequence of the fixation, there grew sooner or later a disagreeable consciousness of difference from others. Achievement as others achieved was blocked. Fantasy thinking became an easy substitute, but that offered only a temporary escape. Repression of the whole disagreeable reality became inevitable. All this means of course the formation of a complex. The maladjustment grew with the years and the struggle between the id and the ego-ideal became more and more acute. This it will be recalled is essentially a struggle between the sex instincts on the one hand and all that had gone into the formation of the ego and the superego on the other. The consequence was a succession of maladjustments and an ever-increasing complication of conflicting formations within the personality organization. As an aid in the struggle to maintain some appearance of adjustment a defense mechanism developed. And, in the unconscious, the chronically activated wish or complex became reinforced by combination, overdetermination as it is technically termed, with one or more of the other drives or instincts. That aberrant manifestations of the repressed wishes or impulses of the complex should appear eventually is inevitable. When they do appear they constitute the hysterical phenomena already described.

¹ For these and the other technical terms of the psychoanalysts the reader should review the presentations in the first two chapters of this book.

But there are only two general ways by which the energy or affect of the repressed material is supposed to be able to find expression: one is through consciousness itself and the other is through the motor or organic pathway. Direct expression through either path is, however, impossible because of the great mass of inhibitions. During sleep there is some relaxation of the inhibiting mechanisms. Then the complex has a chance and we have the highly disturbing, elaborately fantastic, and often recurrent, dreams of the psychoneurotic. Aside from expression in the dreams of normal sleep and perhaps in day dreams the only possibility of expression is through dream-like intrusions or disturbances of the waking consciousness or through motor activities which intrude upon the business of normal life. When we have such dream-like intrusions in the waking consciousness we have an hysterical seizure, and when we have the disturbing intrusions of a motor or organic nature we have the hysterical contractures, paralyses, anesthetics, tics, and tremors.

So far the theory as presented has accounted for the pathogenesis of the psychoneurotic personality and for the energy of the hysterical manifestation. It remains to account for the form of the hysterical symptoms. It will be recalled from the presentation of psychasthenia that the repressed, the complex or wish, is composed of both ideational and affective content, and that the affect may be displaced to associated ideas and through these associated ideas, which seem harmless, find expression in consciousness. This was called an obsession. An hysterical seizure of the somnambulistic type differs from an obsession only in the fact that the ideas in the somnambulism, instead of being incidental, force their way to the focus of consciousness and more or less completely dominate consciousness for a time. Their great forcefulness or energy may be attributed to a greater affect, and this greater affect may be due to a more elaborate complex and more energetic conflict. That there is assumed to be a fundamental sexual basis of the conflict will not be forgotten, and also that there is the possibility

of a reinforcement by over-determination. The ideas which are thus forced into consciousness, creating the somnambulism, are not the mere memories of a shocking experience dissociated by the shock of the experience, as Janet thought, but are ideas to which the affect of a repressed complex has been displaced. Thus the discovery of the nature of the dissociated ideas which dominate during the seizure is no more an explanation of the somnambulism than could the recording of the content of a dream be an explanation of the dream. The explanation lies behind the content of the somnambulistic consciousness and may be of a very different nature.

In addition to displacement the affect may find expression through the motor or organic path; this is known as conversion hysteria because it was supposed originally that a psychic affect was converted into a physiological phenomenon. While the term conversion is used the thought is also that the form of organic disturbance is a symbolical form of expression of the repressed complex or the expression of a protective wish. An hysterical vomiting, for instance, is reported to be the symbolical expression of a desire to be rid of something repugnant; again an hysterical paralysis or mutism may make possible what at heart the patient desires but the wish to do has been repressed. The reason why he wishes to do it may be but a part of a very elaborate complex. Here is the explanation for the hysterical paralysis following a therapeutic immobilization. The patient really does not wish to get well. The same may be said of an hysterical anesthesia. This explains also why the hysterical patient is not troubled by the hysterical symptom; it is actually the realization of a wish. The ideas expressed in the organic disturbance or in the somnambulism may be distorted from the real meaning also by what is known as condensation. Two or more ideas of the complex may be condensed into one and thus have a different apparent meaning, one which is permissible to the ideals or inhibiting mechanisms and thus be the vehicle for the release of some of the repressed

affect. A reversal of the proper or original sequence of ideas is also thought to be a form of concealment by which expression becomes possible.

The heavy emphasis once placed upon the sex urge as a factor in the motivation of hysteria is not now so generally accepted. While psychogenic ways of interpretation are growing in popularity with psychopathologists, there is a markedly eclectic attitude toward all schemes of interpretation. Sex is recognized as a basic drive in life and one around which many hysterics develop; but it is also recognized that feelings of insecurity leading to intense fear for personal welfare constitute a center around which hysterical troubles develop. This was especially true of the war psychoneurosis cases. In civil life the will-to-power drive and the associated inferiority feelings are frequently significant motivations. There are those who continue to be strictly psychoanalytic in all their interpretations and there are also those who prefer the interpretations of Janet and of Babinski; but the tendency of the times seems to be definitely away from a slavish adherence to any one scheme and toward the usage of whatever interpretative concepts will serve best in any given case.

SELECTED REFERENCES

- Adler, Alfred, *Study of Organ Inferiority and Its Psychological Compensation*. New York, Nerv. & Ment. Dis. Pub., 1917. Pp. 86.
- Babinski, J., "My conception of hysteria and hypnotism," *Alienist and Neur.*, 1908, 29, 1-29.
- Bagby, English, *Psychology of Personality*. New York, Holt, 1928. Pp. 236.
- Burnham, W. H., *The Normal Mind*. New York, Appleton, 1924. Chap. XI. (Contains material on hysterical epidemics.)
- Charcot, J. M., "Hystero-epilepsy" (Article in Tuke's *Dictionary of Psychological Medicine*).
- Coriat, I. H., *Abnormal Psychology*. New York, Moffat Yard, 1910. Part II, chap. V.

- Diller, T., "The question of hysterical analgesia and the theory of Babinski," *J. Abn. Psychol.*, 1920, 15, 55-56.
- Eder, M. D., *War Shock*. London, Heineman, 1915. Pp. 154.
- Fox, C. D., *Psychopathology of Hysteria*. Boston, Badger, 1913. Pp. 437.
- Freud, S., *Selected Papers on Hysteria*. New York, Nerv. & Ment. Dis. Pub., 1909. Pp. 200.
- Healy, W., Bronner, A. F. and Bowers, A. M., *The Structure and Meaning of Psychoanalysis*. New York, Knopf, 1930. Pp. xx, 482, xxiv.
- Hitschman, Edward, *Freud's Theories of the Neuroses*. New York, Nerv. & Ment. Dis. Pub., 1913. Pp. 154.
- Hollingsworth, H. L., *Psychology of the Functional Neuroses*. New York, Appleton, 1920. Pp. 259.
- Janet, P., *The Major Symptoms of Hysteria*. New York, Macmillan, 1907. Pp. 345.
- Janet, P., *The Mental State of Hystericals*. New York, Putnam, 1901. Pp. 535.
- Kempf, E. J., *Autonomic Functions and the Personality*. New York, Nerv. & Ment. Dis. Pub., 1918. Pp. 156.
- MacCurdy, J. T., *War Neuroses*. London, Cambridge Univ. Press, 1918. Pp. 132.
- Mott, F. W., *War Neuroses and Shell Shock*. London, Oxford Press, 1919. Pp. 348.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. XXVI.
- Southard, E. E., *Shell-shock and Other Neuro-psychiatric Problems*. Boston, Leonard, 1919. Pp. 982.
- Smith, G. E. and Pear, T. H., *Shell Shock and its Lessons*. London, Longmans, 1917. Pp. 146.
- White, W. A., *Mechanisms of Character Formation*. New York, Macmillan, 1916. Pp. 342.
- Wilson, S. A., "Some modern French conceptions of hysteria," *Brain*, 1911, 33, 293-337.
- Wolfsohn, J. M., "Predisposing factors of war psychoneuroses," *J. Amer. Med. Asso.*, 1918, 70, 303-308.
- Yealland, L. R., *Hysterical Disorders of Warfare*. London, Macmillan, 1918. Pp. 264.

CHAPTER VII

MULTIPLE PERSONALITY

COMMON MISCONCEPTIONS, GENERAL CHARACTERISTICS, BEAUCHAMP CASE, NORMA-POLLY-LOUISE CASE, CAUSES, POSSIBLE NUMBER OF PERSONALITIES, CRITERIA OF SECONDARY PERSONALITY, INTERPRETATIONS, METHODS OF TREATMENT.

The term multiple personality, like so many others in psychology, must be more strictly limited in its definition in order to eliminate confusion. Both the term and the topic have proved too alluring to the authors of novels and plays and scenarios. The result has been a wealth of literary portrayal which often does violence to the facts. As a consequence the notion is abroad that multiple personality is a very common form of mental disturbance. The reverse is the truth. It is very uncommon. A few years ago competent authors were saying that probably not more than twenty-five authentic cases were known to science. Since then others have been brought to light, yet it is doubtless quite safe to say even now that not more than fifty authentic cases are known to science.

Common Misconceptions. Many forms of human behavior are often mistaken for multiple personality. There is a very misleading phenomenon of child life, perhaps more common among girls than boys, about which very little is really known beyond the fact of its more or less frequent occurrence. This is the distinction between the child as others know it and the child which "lives inside." It has been admirably described by Una A. Hunt in her book entitled *Una Mary*, the latter name being the name she applied as a child to the little girl who lived inside herself. This dichotomy, if it be such, is sometimes mistaken for multiple personality. While it may have some re-

lationship to actual multiple personality when that occurs, the phenomenon itself is but a stage in development. Usually this suggestion of dual life in childhood disappears by puberty, although instances are known of its continuation into mature years.

Then again the many-sided self is sometimes confused with multiple personality. Everyone recognizes that there are different patterns or modes of organization within himself which make it possible for him to think and to act differently in his professional contacts from what he does in his domestic or social contacts. The gracious person in one environment may be stern and forbidding in another, may be so strikingly different as to give rise to a temptation to use the term dual, or multiple, personality; but there is in such a case no disturbance of memory and no utter disappearance of those instincts and emotions in the one phase or side of the personality which are most conspicuous in the other. There is in such a case no actual break-up of the personal synthesis but merely the temporary domination of behavior by one set or pattern within the synthesis.

General Characteristics. Most psychologists today think of the term personality as the most comprehensive applicable to the behavior of a single individual. It designates the sum total of the neuropsychic organization, and thus includes intelligence, instinct, sentiment, motor control, all sets or patterns or determining tendencies, all habits, all memories, all that which from within the organism is consciously or unconsciously governing or conditioning its behavior. Normally all this is organized into one more or less highly integrated whole or personality. But there are individuals in whom at times certain portions of the personality fail to function in a normal manner. They are either dissociated from the personality synthesis, or they are repressed to the point of little influence or of greatly changed influence on the behavior of the personality. Such individuals have been described in the chapter on memory dis-

turbances and in the preceding chapters on the psychoneuroses. But amnesias, obsessions, compulsions, phobias, monoideic somnambulisms, polyideic somnambulisms, and fugues are not cases of multiple personality, although in so far as they are functional or psychoneurotic in nature they are allied to multiple personality and contribute much to the understanding of cases of multiple personality when such do occur.

When there is more than one synthesis there is properly more than one personality. When the behavior of an individual indicates amnesia for certain considerable periods of life and the apparent lack of certain instincts, emotions and determining tendencies which to a person in such an environment and social status would be normal, and when such an individual at another time manifests the possession of all that which at the other time was lost to memory and also possesses those instincts, emotions and determining tendencies which at the other time were missing and is now amnesic for the former state and lacking in all the other traits common to the former state, then such an individual may be said to possess two syntheses and be suffering from multiple personality.

For full descriptions and analyses of multiple personality cases every student of the subject should read the few classic cases.¹ He will note therein that the change from one state to the other may take place frequently, several times a day in some instances, or very infrequently, even up to months of duration in one state. At the time when these changes occur there is said to be a noticeable change in attitude, bearing, and facial expression. Janet thinks that there is always a lapse of consciousness at the moment of change or just between the two states. Others do not always report such lapses. Prince tells how one of the secondary personalities in the Beauchamp case appeared while he had another personality hypnotized. The patient unexpectedly awoke from the hypnotized condition but awoke with a very different personality. This difference of personality, it

¹ See in list of references Morton Prince, W. F. Prince, Janet, and Goddard.

should always be remembered, is a difference both of memories and of character traits (instincts, emotions, native and acquired behavior patterns). Sometimes there is a complete cleavage between the two groups or syntheses. In such case the one would have no recall whatsoever of the contents of the memories of the other and the character traits of the one would not appear in the other. This type has been designated by Janet as the reciprocal form of multiple personality. Few cases of this extreme cleavage are known. It more often happens that there are certain traits which overlap and that in one state there is some recall of the ideational and perceptive experience of the other, although vague like the waking recall of dream life.

Beauchamp Case. The most famous of all cases of multiple personality is that known as the Beauchamp case which was elaborately studied and reported by Morton Prince.¹ One personality, B₄,² had a complete memory for all events prior to the break-up six years before the beginning of Prince's study. She was irreligious and highly self-assertive, stubborn, strong-willed, selfish and easily aroused to anger. She liked to meet people but read very little. Another personality, B₁, had a fragmentary memory for events subsequent to the time of the break-up, subsequent to the period covered by B₄'s memory. This B₁ personality was also notably different in character traits. She was very religious and highly conscientious, manifesting marked self-abasing tendencies, and seemed to lack all other traits normal to most human beings. Still another personality, B₃, or Sally as she is often called, had a clear recall for events for which B₁ was amnesic while at the same time she had a hazy dream-like recall for all other events since the break-up. This Sally personality was gay, joyous, full of fun,

¹ See his *Dissociation of a Personality* and also "The theory of psychogenesis of multiple personality," *J. Abn. Psychol.*, 1920-21, 15, 67-135. (The student should observe also that this name is always pronounced Beecham.)

² Prince did not use the same designations for each of his several personalities throughout his publication. The designations here used conform to his final scheme.

much given to pranks, childlike and volatile, but lacking in those traits which were so conspicuous in B4 and Br. From time to time some memory items shifted about from one personality to another. While the reasons for these shifts have never been clear, it is possible that they may have been caused by the efforts of her physician to re-organize the personality into one integration.

When Miss Beauchamp first came to Morton Prince the several personalities were already well established. She was then twenty-three years of age. Her history prior to this psychoneurotic break-up is the familiar one of nervousness and maladjustment. At thirteen years of age she suffered the loss by death of her mother, which in her case was an exceptionally severe shock. During the next three years she suffered a series of emotional shocks culminating in escape by running away from home. There were recurrent headaches and nightmares and sleep-walking and trance-like states which are, all together, a clear indication of poor adjustment and weak synthesis.

Norma-Polly-Louise Case. Almost as valuable as the Beauchamp case is this one reported by Goddard¹ and which was studied in the light of all that had been learned from the work of Janet and Prince. Here also is the familiar history of poor health and emotional strain and sleep-walking and other evidences of poor antecedent adjustment. But in this case the break-up came at the much earlier age of sixteen years. The Norma personality was quiet, polite, co-operative, cheerful and happy. Her intelligence was that of a girl sixteen years of age, and her writing was in accord. But there were notable gaps in her memory. She could not recall the events of her other personality, the Polly states. This Polly personality was at first, and for much of the time, more like that of a child four years old. As Goddard worked on the case there were some changes to traits of an older child but not wholly so. Polly was

¹ Goddard, H. H., *Two Souls in One Body?* New York, Dodd, Mead & Co., 1927. Pp. 242.

mischievous, willful, troublesome, wild and boisterous, but honest and truthful. Her language was decidedly childish. She ate in a crude vulgar manner. When given a pencil and paper, she produced nothing but childish scrawls and crude drawings and some simple words. Her memories were those of the Polly state. The Louise personality appeared later after much effort at re-synthesization of these personalities and appeared to be the organization which had existed prior to the break-up, because, when this Louise organization appeared, it was amnesic for all that had happened in the Norma-Polly period.

Causes. The causes of multiple personality are in the abstract the same as those already listed for hysteria. While there is no reason at present for supposing a special innate predisposition to the development of multiple personality, there is in the case histories ample reason for supposing that there is usually an innate or connate predisposition to nervous weakness. Histories usually contain evidence of former psychoneurotic disturbance although perhaps of a much milder nature. There is also usually found a history of prolonged neurasthenia or at least of excessive fatigue. Goddard has made much of what he terms a lack of sufficient energy to keep the entire brain functioning.

But these must be supplemented by the psychogenesis of the secondary personality. Prince has admirably described this for Sally, the most diverting of all the personalities in the Beauchamp ensemble. Sally was the personification of all the gay, youthful, mischievous, playful, joyous, carefree traits or impulses. For many years prior to the breakdown of Miss Beauchamp there had been a constant repression or rejection of all these Sally traits and impulses. They were in conflict with the studious desires and ambitions and they were in conflict with the intense religiosity. Hence the repression. It is probably significant, also, that she had cultivated habits of abstraction, absent-mindedness and day-dreaming. The mass of repressed

material so established, Prince thought, became dissociated; and thus it became possible for it to function autonomously, although subconsciously, up to the time of the appearance of Sally. This repressed material, allied as it was in nature, became synthesized, eventually appearing as Sally when the dominating personality was shattered, and then the synthesis progressively included the conscious experiences of Sally. The shocking emotional experience, which has already been so often mentioned as the immediate cause of the onset of hysterical symptoms, appears in a most dramatic fashion in the history of the Beauchamp case. She was overtired, worried, and wrongfully burdened with responsibility which she was ill fitted to carry. Then in the midst of a thunderstorm, itself often sufficiently shocking to a neurasthenic woman, there came unexpectedly an experience which re-aroused all the emotional excitement of a but recently abortive love affair. Probably such emotional shocks can be found in most cases of multiple personality and should be listed with the causes.

Possible Number of Personalities. It is safest to say at present that we do not know into how many divisions a personality may be fractured. The relatively simple dual personality has been supplemented by studies claiming to present many more. W. F. Prince describes a case (the Doris case) which he thinks to have been divided into five personalities. Janet says that cases have been found with as many as nine or ten. Ladd¹ made a trenchant criticism of the W. F. Prince study in which he argued that instead of five there were really but two personalities; and it has been contended that Morton Prince found several personalities because of the nature of his treatment of the case.

Criteria of Secondary Personality. There is unfortunately no agreement in abnormal psychology upon what shall be called a personality. In cases of automatic writing, instances of the

¹ Ladd, G. T., "A Case of Multiple Personality," *Yale Review*. 1919, N. S. S. Pp. 318-333.

dissociated functioning of the writing mechanism with a single individual, the writing hand is often treated as a secondary personality. But is it? In good automatic writing, to be sure, there are memories and some evidences of emotion, but this is a very limited range of material to be called a personality. The content of the automatically written material often assumes that it is the product of a personality. That may easily be due, however, to suggestion, as seems to have been true in one of Janet's cases. If the observer of automatic writing assumes it to be the product of a personality he may himself be the real cause of its assuming the attributes of a personality. The justly famous Hanna case¹ is usually, or at least very often, referred to as one of dual personality. But in that instance the phenomena were very different from that of the hysterical break-up of a synthesis. Following a physical accident in which Hanna was rendered unconscious, he awoke without any memory, not even of the simple functions of life, such as eating. Everything had to be relearned. There was plenty of evidence, especially through his behavior while asleep, of the actual conservation of his former memories. It was but a general amnesia due to some disturbance affecting the reproductive process. This disturbance did not, however, affect the reproductive process so far as newly acquired material was concerned. Gradually there was built up a new set of memories. During the attempts to revive the old there was for a time an oscillation between the two. Here there are some superficial similarities to multiple personality, but only superficial. There was a set of recent memories not yet connected with the older set, but there was no splitting of the instinct-emotional phases or parts of the personality. Unless one is to apply the term multiple personality loosely this seems to be rather a case of general amnesia of traumatic origin, which was slow in responding to treatment.

Fugue cases may be and often are confused with those of

¹ Sidis, B. and Goodhart, S. P., *Multiple Personality*. Part II.

multiple personality. That of Ansel Bourne made famous by William James¹ and so often abstracted in subsequent literature is a good example. He suddenly disappeared and lived for a few weeks in another community under another name, even setting up a small business. If we but knew the history of this case in sufficient detail, especially if we knew details which to-day are thought to be highly significant, we might find that in the secondary state he was dominated by a synthesis of both dissociated memories and repressed impulses or desires. In that case it would properly be called a dual personality unless, and here again we lack established criteria, it should be agreed to limit the term multiple personality to those cases where the splitting resulted in two or more syntheses each of which was sufficiently integrated to appear more than once. If such a criterion were set up and agreed to, then the Bourne case would fall under the head of a fugue. Fugues of course may be recurrent and in the secondary state subjects may experience recollections of the content of the former fugue states. Here there is a very close and important approximation to the characteristics of multiple personality. In the fugue, however, as described in the chapter on hysteria, the individual is dominated by the desire to get away and while that desire may be thought of as split off from the personality synthesis it is a very small portion of a personality, perhaps too small to justify designation as itself a personality. It is becoming apparent that the term personality is often applied to a very limited group of neuropsychic mechanisms; but on the other hand it is equally apparent that we do not yet know how many of the factors of personality nor how large a portion of them are necessary to the constitution of a personality, even though it be a secondary personality.²

¹ The most accessible presentation of this case is to be found in James' *Principles of Psychology*, p. 391 of Vol. I.

² Franz published the description of a most interesting case but if it be properly one of multiple personality is open to question. There were two well organized memory systems. When one was dominant there was

Interpretations. Theoretical interpretations of multiple personality are not quite so divergent as have been the interpretations in some other types of abnormality. Janet brilliantly relates the multiple personality to his group of hysterical somnambulisms. In the monoideic somnambulism he found a very limited and closely knit group of ideas dissociated; in the polyideic somnambulism he found a larger and less perfectly knit group of ideas dissociated, the uniting feature being an emotion. In the fugue he found an emotion or impulse dissociated and with it the memories for those events happening during the period of domination by the dissociated impulse. In each case a somewhat larger portion of the synthesis called the personality has been severed from the rest, severed except for some rather loose and not readily excited associative link. In the monoideic somnambulism there was no response to the outside world because of the domination by the limited group of ideas; in the polyideic there was a little more possibility of response to the outside world, although the individual in such a state would be immediately recognized as abnormal. In the fugue there was much more responsiveness to the outside world and the individual merely gave bystanders the impression of being queer. The secondary personality would in such terms then be but the dissociation of a still larger and more inclusive portion of the general synthesis, a portion so large that it could act as a personality and produce most of the usual manifestations of a personality. So one can think of a synthesis weak by nature or weakened by sad experience suffering the still further desynthesizing effect of a shockingly intense emotion, the unaided or immediate reaction from which is but a partial recovery of synthesis. It is shattered into several portions, each of which is synthesized or integrated within itself but each of which is split off more or less completely from the remainder. In those

amnesia for the other. And there were fugue episodes. But there is little if any description of trait differences. See Franz, S. I., *Persons One and Three*. New York, McGraw-Hill, 1933. Pp. 188.

instances where there is overlapping or material in common between two of the portions of the personality, one can think of a partial splitting or less complete cleavage. In the Beauchamp case there was the neurasthenic condition and the emotional shock resulting in the fracturing of the personality. B₄ was well set apart while there was some considerable overlapping or material in common between B₁ and B₃. Each, however, had so large a group of memories and feelings peculiar to itself as to make it readily apprehended as a personality although recognizably incomplete.

Morton Prince offers certain further contributions to the theory which seem in large part to be supplementary rather than antagonistic to that of Janet. His special and most notable addition is the use of his doctrine of a co-conscious. Prince thinks of an unconscious and of a co-conscious. By the unconscious he designates that retentiveness on the part of the central nervous system often referred to as physiological memory. By co-conscious he indicates those activities or processes the conclusions of which we know and which seem to indicate behind them a conscious intelligence. But as these processes were not in the personal consciousness of the individual they must therefore, as Prince reasons, be a consciousness operating simultaneously with the personal consciousness although not a part of it. It is this simultaneous consciousness which he calls the co-conscious. In the fact that Sally knew the thoughts of B₁ he finds evidence for her co-conscious existence. She must have been consciously observing B₁ in order to be possessed of this material immediately upon her own coming into a period of dominance. Otherwise Prince's interpretation harmonizes very well with that of Janet except perhaps in his placing more emphasis upon the history leading up to the dissociation and less upon the immediate causation by emotional shock. In his discussion of the psychogenesis of the Beauchamp case he points out the long-standing habit of rejecting all impulses of a playful or mischievous nature and the conflict of these with

her extraordinary conscientiousness, her Puritanical idealism, and her marked religiosity. This rejected or repressed material became synthesized into the Sally personality.

In terms of psychoanalytic theory the student will by now have learned to expect that hysterical phenomena are to be explained in terms of repressed complexes, probably with a sexual background, which eventually break through in one form or another thus becoming the motivation and explanation of the hysterical symptoms. Except for the change of terminology this is not a far cry from the interpretations offered by Janet and by Prince, especially if one consolidates the essential features of the two. There was certainly the background of a sex motivation in the rejected love affair in the Beauchamp case. It was the violent stimulation of this and the failure of repression which eventuated in the multiple personality. The excessive development of piety might be interpreted as a defense mechanism to assist in the repression of the much too insistent playful impulses.

Methods of Treatment. The cure of multiple personality is to a considerable extent proof of the correctness of the interpretations offered. The best presentations of this are to be found in Prince and in Goddard. Both proceeded systematically to bring about a resynthesization of the fractured personality primarily through hypnosis. In the hypnotized state of one personality Prince sought to establish memory for events which were the property of another personality, thinking that eventually he might establish such complete connections between the two as to make possible the arousing from the hypnotized condition without reversion into the limited personality which he had hypnotized. It was thus that he sought to knit together B₄ and B₁. Sally he sought to shut out by arguing with her that she should not return, that she should cease coming, making certain of course that in the synthesis of B₁ and B₄ there was to be a full knowledge of Sally and her ways. After many trials he eventually suc-

ceeded in awakening the synthesized B1-4 without her reverting into either B1 or B4. For a while the duration of this synthesis was uncertain and there were a number of relapses. But eventually success was achieved and years afterward Prince reported that she was still living happily with no recurrence of the disturbed condition. The synthesis was complete, the memory was complete, the only traces of Sally left were the occasional flashing eye and playful mood. It is apparent, too, that Prince brought about a better adjustment to society so that as the psychoanalysts would say he had "resolved the conflict" between her piosity and her playfulness. With the removal of the repressions and the conflicts and the improvement of general physical health, continued stability should be expected. Goddard makes much of the improvement of the general health in order to supply sufficient energy to make possible the integrated functioning of the brain as a whole. Without that he believes that a completely reintegrated personality is impossible.

SELECTED REFERENCES

- B. C. A., "My life as a dissociated personality," *J. Abn. Psychol.*, 1908-09, 3, 240-260.
- Binet, A., *Alterations of Personality*. New York, Appleton, 1896. Pp. 356.
- Coriat, I. H., *Abnormal Psychology*. New York, Moffat Yard, 1910. Part II, chap. IV.
- Fox, C. D., *Psychopathology of Hysteria*. Boston, Badger, 1913. Chap. IX.
- Franz, S. I., *Persons One and Three*. New York, McGraw-Hill, 1933. Pp. 188.
- Goddard, H. H., *Two Souls in One Body?* New York, Dodd, 1927. Pp. 242.
- Hart, Bernard, "A case of double personality," *J. Ment. Sci.*, 1912, 58, 236-243.
- Janet, P., *The Major Symptoms of Hysteria*. New York, Macmillan, 1907. Chap. IV.

- Kempf, E. J., "Some studies in the psychopathology of acute dissociation of the personality," *Psychoanal. Rev.*, 1915, 2, 361-389.
- Mayer, E. E., "A dissociated personality. With an analysis of its psychological problems," *Amer. J. Insan.*, 1920, 76, 465-487.
- Prince, Morton, *The Dissociation of a Personality*. New York, Longmans, 1906. Pp. 569.
- Prince, Morton, "Miss Beauchamp. The theory of the psychogenesis of multiple personality," *J. Abn. Psychol.*, 1920-21, 15, 67-135.
- Prince, Morton, "The psychogenesis of multiple personality," *J. Abn. Psychol.*, 1919, 14, 225-280.
- Prince, Morton, *The Unconscious*. New York, Macmillan, 1914. Chap. VI.
- Prince, W. F., "The Doris case of quintuple personality," *J. Abn. Psychol.*, 1916, 11, 73-123.
- Prince, W. F., "The Doris case of multiple personality," *Proc. Amer. Soc. Psychological Res.*, 1915, 9; 1916, 10.
- Sidis, B. and Goodhart, S. P., *Multiple Personality*. New York, Appleton, 1905. Pp. 462.
- Wholey, C. C., "A case of multiple personality," *Amer. J. Psychiat.*, 1933, 12, 653-688.

CHAPTER VIII

SPEECH ABNORMALITIES

STATISTICAL STUDIES, PERSONALITY EFFECTS, DEFECTS BY BRAIN LESION OR NATIVE DEFICIENCY, DEFECTS OF ARTICULATION NOT DUE TO BRAIN LESION, STUTTERING, IMAGINAL DEFECT THEORY, DEFECTIVE PHYSIOLOGICAL DOMINANCE THEORY, MALADJUSTMENT THEORY, TREATMENT OF SPEECH ABNORMALITIES.

Of speech abnormalities many kinds have been isolated and named. The current classifications are lengthy and bewildering. For all the different classes and sub-classes special terms have been devised, which only the specialist in speech pathology could be expected to master.¹ While speech disorders have been known from very ancient times and many curious devices for treating them have been tried out and seriously advocated, actual experimental work upon them was much delayed. It is only in very recent years that real scientific progress has been made toward an understanding of their essential nature.

Statistical Studies. Many investigations have been made of the frequency of speech abnormalities. Their figures range from 2% to 8% among school children. Figures on the frequency of stuttering vary from 0.6% to as high as 2%. It is now commonly asserted that about 1% of school children stutter in one form or another. Whether or not this figure would

¹ The reader who desires will find these in the following: Fletcher, J. M., *The Problem of Stuttering*. New York, Longmans, 1928. Chap. II. Robbins, S. D. and Stinchfield, S. M., *A Dictionary of the Disorders of Speech*. Boston, *Amer. Soc. Stud. Disorders of Speech*, 1931. Stinchfield, S. M., *Speech Disorders*. New York, Harcourt, 1933. Chap. II. Travis, L. E., *Speech Pathology*. New York, Appleton, 1931. Chap. II.

apply as well in adult years is not known. By far the larger proportion of stuttering cases develop, or appear, before the age of six. Some estimate that as many as 80% of stutterers show their difficulty before six years of age and Travis estimates that 85% show the difficulty before eight years of age. It is worth noting in this connection that most of these speech troubles make their appearance before the time of entering school. There is a curious and still unexplained sex difference. Male stutterers greatly outnumber females. Here figures range from a male preponderance of two to one up to estimates as high as ten to one. There seems to be no correlation with intelligence. Where intelligence testing has been handled with due consideration for the speech defect in the process of testing, the distribution of scores closely approximates that of normal speech groups. Delayed speech development is frequently accompanied by low intelligence. Stutterers of college age often show an average intelligence considerably above the normal. This is usually attributed to the early withdrawal from school of all speech defectives except those of superior mental ability.¹

Personality Effects. Few human defects are more conspicuous than is a defect of speech. It obtrudes itself into every social situation and can be concealed only by silence which itself, if persisted in, soon arouses suspicion of abnormality. And there is a curious willingness to ridicule those who suffer such abnormalities. Where the troubles of the blind and deaf and maimed are looked upon with pity and reserve, the troubles of those with defective speech are made a source of amusement. The struggle to live and achieve against the handicap of a speech defect is presumed to be a fertile source of inferiority troubles. Some withdraw, become more and more introverted. Some develop a rebelliousness which makes them difficult.

¹ For summary of statistical studies see: Barnard, R. H., "The relation of intelligence and personality to speech defects," *Elem. Sch. Jr.*, 1930, 30, 604-620.

Others seek actively to develop compensations which will bring them the satisfactions of achievement in spite of their handicap in conversation.¹ It is not surprising to learn that school children with speech defects are somewhat behind others of their age in educational development. This may be neither necessary nor fair, but it appears to be a fact.

Speech Defects by Brain Lesion or Native Deficiency. While not so commonly seen in the contacts of everyday life as is stuttering, it should nevertheless be recognized that there are many forms of speech disturbance which are directly traceable to lesions in the central nervous system. Injuries or degenerations which in any way affect nerve structures involved in speech, the peripheral nerves, nerve tracts, centers in the medulla, associated centers in the basal ganglia or the involved cortical areas, will have their peculiar effect upon the speech function. Brain tumors, brain injuries of many kinds, such degenerating diseases as paresis, encephalitis, sclerosis, hemorrhages and a host of other conditions have been listed.² Whatever be the cause of feeble-mindedness is also frequently a cause of speech disorder. Certainly some of the feeble-mindednesses are due to defective brain development and it is commonly assumed that some of the speech disorders are likewise explainable; but it is also possible that some of the speech disorders in feeble-mindedness are the actual consequence of the mental defect. They may be of a psychoneurotic nature traceable to the difficulties of achievement and social adjustment suffered by those obliged to live with the handicap of feeble-mindedness. In this connection should be mentioned also the large group of speech disturbances classed as the aphasiae which are probably in most instances properly attributable to brain lesions.³

¹ Johnson, Wendell, *Because I Stutter*. New York, Appleton, 1930. Pp. 127.

² S. M. Stinchfield (*Speech Disorders*) has made a useful listing of these. See her chapter 5.

³ For presentation of the aphasiae see chap. IV.

Defects of Articulation Not Due to Brain Lesions. Of these there are two groups: those due to structural defects and those attributable to developmental influences. While the effects of abnormalities of structure can sometimes be overcome, they are frequently not overcome, and there are also many structural defects which make normal speech impossible. Cleft palate, tongue-tie, harelip, nasal obstructions, teeth badly out of alignment and other defects produce conditions of articulation which cause peculiarities of speech. And then there are the possibilities of a very long list of bad speech habits. The nerve and muscle and bone structures are normal but the individual has been permitted to grow up with bad habits of pronunciation. Baby-talk is a common example. Association in early years with those who habitually mispronounce the common words of our language is another cause. If the hearing is defective, bad habits of speech are very likely to appear because the sounds made by others are imperfectly heard and there is a correspondingly inadequate check upon sound prediction. However the undesirable habits be brought into being, their continuation into adolescent and mature years can be the source of much embarrassment and of allied distortions of personality.

Stuttering. This form of speech disturbance, which is really a group of defects, has received more attention than the others. The lack of any apparent cause, as well as its frequency and curious associated behavior, has made it attention compelling. Its many features combine to produce many different individual patterns. There is the familiar repetition of consonants before vowels. There are facial tics, especially the blinking of the eyes. Sometimes there appears to be a temporary inability to utter any sound at all. The sufferer seeks frantically for a substitute word which can be spoken. There is muscle tension in other parts of the body, frequently of the hands and arms. There is the jerky grouping of words and phrases and the absence of the ordinary rhythms of speech. And, associated

with these, there is the often obvious emotional distress of the stutterer.¹

Stutterers are frequently able to sing with entire freedom from speech disturbance. The nature of the social circumstances appears to be frequently the determining factor in the appearance of a stutter. One who stutters badly in the presence of others may be able to speak and read with entire freedom when alone.

Imaginal Defect Theory. It has been seriously contended that stuttering is due to the temporary lack of the proper conscious image. This interpretation is based on the old assumption that each muscular movement was preceded by a certain conscious content. It was supposed that the image was necessary before the action would take place. If the image thus were not forthcoming, if there were an amnesia for the proper image, then the action necessary to the spoken letter or syllable could not be aroused. When, for example, a stutterer was frequently reiterating the consonant preceding a vowel but was unable to proceed to the vowel, the interpretation offered was that there was a temporary amnesia for the image of that vowel. Some have contended that this was an amnesia for the proper auditory image; others have thought that it was an amnesia for the proper visual image.²

Even though this imaginal amnesia theory were itself acceptable, there would still remain the problem of explaining the temporary amnesia. But the theory is no longer tenable. It is now well known that every action is not preceded by its proper image. In speaking, we are not first conscious of the sound or the usual appearance of each syllable of a word before that syllable is uttered. There are conscious cues, to be sure,

¹ The term stammer is now being abandoned by speech pathologists because of the confusion which has developed as a consequence of attempts to give it conflicting and highly circumscribed meanings.

² Bluemel's presentation is based on this imaginal amnesia theory. See Bluemel, C. S., *Stammering and Cognate Defects of Speech*. New York, Stechert, 1913. 2 vols.

and these are still thought by many psychologists to be of central arousal and therefore imaginal in nature; but these conscious cues for speech are highly schematized and each frequently serves to set off a series of well-habituated patterns for vocalization.

Defective Physiological Dominance Theory. By some brilliant experimental studies, Travis and his associates have demonstrated the high probability that many instances of stuttering are to be attributed to a defective or disturbed physiological dominance within the central nervous system. This concept of dominance is related to the already familiar notion of levels of functioning, and to the established grading or inhibiting effect of cerebral organization upon lower levels. Many physiologists like to think of growth changes and the development of control in terms of what they call gradients of excitation. Except for very simple nervous systems there is always one part of a nervous organization which is more easily aroused into function and toward which excitations are drawn. It is this gradation of responsiveness and influence upon the whole pattern that led to the term physiological gradient. In the central nervous system of the normal human being, there is a gradient of excitation leading up to dominance by the cerebral cortex. The same concept of an excitation gradient is presumably applicable to large patterns within the central nervous system as well. It is as such a pattern, with a gradient leading up to one center of dominance, that Travis and his associates now conceive the organization for normal speech to be.

Evidence continues to accumulate in support of the long suspected dominance of the left hemisphere of the brain over the right in most individuals. And here it will be recalled that Broca's speech area is ordinarily presented as being in the left hemisphere. In terms of the concept of physiological dominance and of a gradient of excitation, Broca's speech area would be an area of highest excitability and the center of physiological dominance. But it must at the same time be appreciated

that speech is a very complex function. It involves movements of the diaphragm, of the thorax, of the larynx and the vocal cords, of the tongue, the soft palate, the lips and the jaws. And all of these movements must be in nice co-ordination. In terms also of this hemisphere dominance, handedness and eyedness, laterality of function, is explained. If in a given person the left hemisphere is dominant, then it must be that the centers of physiological dominance, the upper extreme of every gradient of excitation must be in the left hemisphere. Such a person should then be right handed, and right footed and right eyed, completely dextrad in all muscular manifestations of this dominance. Speech, however, is peculiar in that it involves a very nice co-ordination of muscular activity on both sides of the median plane. In the case of the muscles for the vocal cords, both sides are represented but they are very close together. Both hemispheres of the brain must therefore be involved, but dominance and nicety of control could presumably come from only one place of highest organization, from one side of the brain only, and any disturbance of this dominance would result in a disturbance of speech.¹

Travis's belief ² is that stuttering is the inevitable consequence of any disturbance of, or defect in, this dominance by one hemisphere in the control of the speech organization. Which hemisphere happens to be the dominant hemisphere is not of so great importance provided it is dominant. But, if an individual began life with a predisposition to left-hemisphere dominance and for several years developed in the direction of left-hemisphere dominance and then something happened which disturbed this development and to some extent forced a partial dominance of the right hemisphere, the consequence might be the failure to develop a perfect focalization of control of the

¹ Important experimental support for this concept will be found in Peterson's study of cerebral dominance in the handedness of a rat. See Peterson, G. M., Mechanisms of Handedness in the Rat. *Comp. Psychol. Monog.* 1934, 9, No. 6. Pp. 67.

² Travis, L. E., *Speech Pathology*. New York, Appleton, 1931. Pp. 331.

speech functional organization. There might then be conflict between the hemispheres and conflict in the neuromuscular patterns involved in speaking. Such conflicts would be what we term stuttering. Travis has shown that such conflicts do take place when a person stutters. He has demonstrated for example that in stuttering the movements of the abdomen are those of inspiration and the movements of the thorax are those of expiration.¹ If, likewise, an individual began life with a predisposition to right-hemisphere dominance and grew in that direction for several years, there would be great likelihood of conflict and imperfect development of dominance if something should intrude to force a rival development of the left hemisphere.

There can be thus for Travis four primary causes of stuttering: a. A lack of sufficient inherent determination for the development of a gradient of excitation adequate for the complete integration of speech movements; b. Circumstances in the environment which disturb or prevent the development of such organization and dominance; c. Injuries to the brain which prevent the development of such organization and dominance; d. Physical and mental diseases which disturb such organization and dominance.

The environmental circumstances most likely to produce disturbance of the development of the speech organization into proper dominance are those which force the change from the dominant use of one hand after a lead had become manifest in the direction of dominant use of the other hand. So many functional patterns are associated with handedness that any forced shifting to the dominant use of the other hand might conceivably damage seriously this development of hemisphere dominance. This possibility was suspected long before the experimental work of Travis; and, as a consequence, there have been many studies of handedness and speech defect. Many

¹ Travis, L. E., "Studies in stuttering, I. Disintegration of the breathing movements during stuttering," *Arch. Neur. & Psychiat.*, 1927, 18, 673-690.

of these studies left the reader very uncertain about their actual relationship to stuttering; but, in recent years, many investigations have revealed that earlier studies of handedness were very crudely made. Today it is not so much a matter of which hand is used for skilled acts, but of the degree of laterality of functioning. This means the degree of cerebral dominance determined by consideration of eyedness and handedness and footedness. The last two involve the use of the hands in both unimanual and bimanual activities, and the use of the feet in both unipedal and bipedal activities. Many of the earlier studies are doubtless unreliable because they were based merely upon behavior in unimanual activities alone. Percentages are still uncertain, but there is increasing evidence that there are many instances of stuttering which developed apparently as a consequence of forcing a change from a preferred use of the left hand to an habitual use of the right.¹

That all persons who have been changed from a left-handed lead to right handedness do not become stutterers does not invalidate Travis's thesis. Many of them, because of early start or other reasons, may have been completely changed into dominance of the left hemisphere. That there are large numbers of left-handed persons who have no speech disturbance merely means that they have a well-developed dominance of the right hemisphere.

Maladjustment Theory. Of this interpretation of stuttering there are many forms. Some contend that it is a sort of conditioned response with social situations as the conditioned stimuli. Perhaps, for example, the child was forced to speak in public; was badly frightened with the accompanying emotional disturbance of speech; and, subsequently, similar social situations tend to bring on the same speech disturbance. Perhaps there were a number of such early fear experiences associated with speaking; and then there would be also on subse-

¹ For reviews and bibliographies of this literature see: Fletcher, J. M., *The Problem of Stuttering*, pp. 64-75. Hollingworth, H. L., *Abnormal Psychology*, pp. 438-439. Travis, L. E., *Speech Pathology*, pp. 56-62.

quent occasions the fear of having a repetition of the speech disturbance. It may be that some of the stuttering associated with the shift from left to right handedness is of this nature. The embarrassment aroused by the clumsy writing on the schoolroom board and the possible jibes of fellow students may have been the cause of the first stutter. Some think that the emotion starting the speech disturbance is of a sexual nature or association. Dunlap¹ thinks that the reason why more boys stutter than girls is because the boys have more obscene words in their vocabularies which they seek to suppress at times, and that this suppression of the socially disapproved words, or effort to suppress, produces a conflict which initiates the stuttering habit.

Others treat the stuttering as a little more complex and place it definitely in the group of functional disturbances now generally called the psychoneuroses. They think that at the base of stuttering there is a poor integration of the personality, perhaps in last analysis attributable to an intrinsic weakness of some sort. Then there follow in their presentations the familiar interpretations of psychoneurotic behavior: emotional stress and shock, reduction of control, repression or conflict, and partial dissociation. Individual instances of stuttering would thus be thought of as comparable to an obsession or a compulsive action or as an hysterical tic or contracture.

The psychoanalysts, and those much influenced by psychoanalytic ways of thinking, also explain stuttering as a psychoneurosis; but they explain it in terms of their concepts of libido, fixation, id and ego. They think of stuttering as the manifestation of a fixation of libido² at an autoerotic level. It will be recalled that the first stage of libido flow is through channels concerned entirely with bodily comfort. One of these is the functioning of the lips, sucking and the movements of breathing. Stuttering is the continuation through life of a fixation

¹ Dunlap, K., "The stuttering boy," *J. Abn. Psychol.*, 1917-18, 12, 44-48.

² For the psychoanalytic scheme of thinking about the personality see the first two chapters of this book and for the psychoanalytic interpretation of the psychoneuroses chapters V and VI.

at this oral-autoerotic level of the libido. The movements of the lips and the sucking in of the breath in stuttering are thought of as retentions of the sucking habits of early infancy. The anxiety or fear experienced by the stutterer is a manifestation of the ego reactions. The ego fears that this infantile autoerotic desire will break loose into expression. The motivation of the stuttering is thus conceived as purely unconscious.

The psychoanalytically inclined also think that some cases of stuttering may be comparable rather to the conversion hysterics. There is a repressed drive or complex developing later in life which, unable to achieve expression through consciousness, does so in a converted manner through the movements of stuttering. It would thus be like an hysterical vomiting or paralysis which by indirection achieves the satisfaction of a wish that is repressed.¹

It should be observed that these interpretations in terms of maladjustment are not in essential conflict with that of disturbance of cerebral dominance. Travis recognizes that some disturbances of dominance are to be attributed to mental diseases. While he might probably hesitate to accept, or even stoutly reject, some of the extremes of psychoanalytic thinking, it is within the range of his interpretation to think of emotional disturbances of the psychoneurotic nature as causes of a disturbance of the gradient of excitation and its focalized control in one hemisphere.

Treatment of Speech Abnormalities. All those who suffer speech defects need to be warned against the many irresponsible persons who have cruelly preyed upon such sufferers. The story of these frauds constitutes a black chapter in therapeutics.²

Scientific treatment of speech defects must depend first upon

¹ For presentation of the psychoanalytic theory of stuttering see the following: Coriat, I., *Stammering*. New York, Nerv. & Ment. Dis. Pub., 1928. Pp. 68. (Includes a useful bibliography.) Blanton, S., "Stuttering," *Ment. Hygiene*, 1931, 15, 271-282. For a modified interpretation in terms of social adjustment see Fletcher, J. M., *The Problem of Stuttering*, chap. VII.

² See J. M. Fletcher's presentation of this in his *The Problem of Stuttering*, chap. I.

a determination of the essential nature of the defect. If it is attributable to anatomical deformities, surgical aid may contribute much. After that there must be no little retraining of the actual habits of articulation. Careful programs of exercises have been worked out for this purpose.¹ In cases of the retention of bad habits of speech from childhood, baby-talk for example, a similar program of retraining will be necessary. But, if it is a case of stuttering which upon examination proves to be a matter of disturbed hemisphere dominance, then the retraining must be of such a nature as to bring about the establishment of the necessary dominance. In such cases, Travis has been notably successful by forcing a full development of laterality. Ordinarily this has involved a shift back to the left handedness which had been forcibly abandoned in infancy or childhood. But in other cases, where the evidence pointed to a natural left-hemisphere dominance which had never been fully developed, the training was in the form of perfecting the right sidedness of the individual's functioning.

If, however, the speech defect appears to be primarily of a psychoneurotic nature, then the program of re-education which relieves the conflict and brings about the social readjustment of the individual is the program to be followed. In such cases the use of formal speech exercises may be decidedly bad, because it would serve to concentrate attention upon the speech habits when actually the attention should be occupied with other matters. In re-education and re-adjustment where the interpretation is made in terms of an early infantile fixation, the psychoanalytic interpretation, the possibility of complete cure is not considered very promising. The psychoanalysts consider such an infantile fixation very difficult of analysis and release. It was established so far back in the personal history, the difficulty of analyzing back to the events of those early years or months becomes so great as to be practically insuperable.

¹ Travis, L. E., *Speech Pathology*, Appendix. Twitmyer, E. B. and Nathanson, Y. S., *Correction of Defective Speech*. Phila., Blakiston, 1932. Pp. 413.

SELECTED REFERENCES

- Barnard, R. H., "The relation of intelligence and personality to speech defects," *Elem. Sch. J.*, 1930, 30, 604-620.
- Bluemel, C. S., *Stammering and Cognate Defects of Speech*. New York, Stechert, 1913, 2 vols.
- Coriat, I., *Stammering*. New York, Nerv. & Ment. Dis. Pub., 1928. Pp. 68.
- Fletcher, J. M., *The Problem of Stuttering*. New York, Longmans, 1928. Pp. 362.
- Johnson, Wendell, *Because I Stutter*. New York, Appleton, 1930. Pp. 127.
- McDowell, E. D., *Educational and Emotional Adjustments of Stuttering Children*. New York, Teachers' Coll., 1928. Pp. 59.
- Stinchfield, S. M., *Speech Disorders*. New York, Harcourt, 1933. Pp. 341.
- Travis, L. E., *Speech Pathology*. New York, Appleton, 1931. Pp. 331.
- Twitmyer, E. B., *Correction of Defective Speech*. Phila., Blakiston, 1932. Pp. 413.

CHAPTER IX

DISTORTED THINKING (PARANOIA)

EFFECTS OF EXCESSIVE FATIGUE, WORRY, OTHER EMOTIONAL DISTORTIONS, DISTINCTION BETWEEN NORMAL AND ABNORMAL, NATURE OF A DELUSION, PARANOIA, ABNORMAL EXTRAVERSION AND INTROVERSION, SUMMARY OF CAUSES.

It is a commonplace that people otherwise normal do not respond normally if they are overtired, worried, suffering indigestion, are badly frightened, or are deeply in love. Fatigue is known to have certain very definite effects upon associations, reducing their number and causing such as do arise to be less meaningful; consequently it is evident that a fatigued brain does not respond as well as when it is fresh. Conditions known as "mental second wind" and "fatigue stimulus" are to be here ruled out, as they are from this point of view but the temporary resumption of the normal functioning. Some studies have indicated that a fatigued mind can do just as good work if it wills to do so, but they have also shown that one of the outstanding characteristics of the fatigued mind is the disinclination to try and the appearance of ideas of incapacity. This disinclination to try is probably emotional in nature, and certainly the ideas of incapacity are likely to arouse emotional conditions especially if there are still duties to be performed or if the person believes that he is responsible for the performance of duties which demand of him more energy than he feels he has at his command.

Effects of Excessive Fatigue. Overworked and overwrought people are everywhere observable. Their behavior is as instructive as it is pathetic. They are said to be irrational, that they will not "listen to reason," that they seem to be domi-

nated by certain notions of duty and refuse to think of themselves or their future. They are said to be "running on their nerve." They work with an exhaustingly intense application and persistency and if interfered with on their own behalf peremptorily cast aside all mention of fear for themselves, and respond by insisting upon their ability to keep going and that they are "all right" with an intensity which reveals much emotional re-enforcement. Their irritability is at once evidence both of fatigue and of the fact that emotional excitement is keeping from any continuous attentive consideration all perceptions or ideas which might result in stopping their mad onrush. It is doubtless correct to say that they are irrational, rationality being assumed to mean the relaxed passage of ideas through the focus of a consciousness free from emotional disturbance and the limiting effects of fatigue, with the ability to come to conclusions that are logically defensible. Fatigue prevents them from thinking normally. The emotions aroused assist in limiting thought to a few ideas and those only of continuing at their work. The generally disturbing effect of emotion upon the course of thought and the distraction of attention to that which arouses the emotion is a commonplace of psychology. It must be obvious that the consequence will be either exhaustion or the forcible interference of others to prevent collapse.

Worry. Comparable features may be seen in the behavior of those who worry. Psychologically worry must be thought of as a chronic subacute form of fear. The effect of fear upon thought is well known to everyone who has ever experienced stage fright or "buck fever." The utter incapacity to act accompanied by a vague awareness of physical weakness and lack of motor control, the sudden transformation of a mind normally well ordered into an intellectual chaos, through which fragments of ideas worthy and worthless vaguely flutter at incredible speed, is a never-to-be-forgotten experience. For psychological purposes it is fortunate that we have all had the experience and that we do not forget it. We can for that reason the better understand

diseased minds. The worrier rarely experiences so overwhelming a disturbance. His fear is much milder, but it is still fear with the characteristic effects of fear. It disturbs his thinking. He has a bad habit of attending too frequently to certain ideas or aspects of ideas which arouse fear. The fear re-enforces the ideas, or it has that physiological effect which makes those ideas the more easily aroused and hence frequently recurrent. A vicious circle is established. There is no use in reasoning with the worrier because of this vicious circle of response. He should attend to other things for his own sake but cannot.

Although the worrier cannot reason normally, that is, he cannot reason with the same habits of evaluation and attention as his healthier associates, he still does some reasoning. The chronic attention to certain fear-arousing ideas brings to those ideas many associations. Related material from advertisements, newspaper stories, magazine articles, and neighborhood gossip draw his attention. The result may be that the notions which at first recurred and aroused the fear, or worry, become greatly elaborated. The person who contemplates his own health and fears that it may not be adequate to his needs and who thinks about it more and more until a habit of such thought is well established, has but started on the road of the worrier. As he goes on the mere idea of possible physical or mental incapacity picks up allied notions. He lifts a heavy trunk some day and, while forgetting the trunk incident, notices the next day a pain in his back. Then he recalls a newspaper story about the hideous significance of a pain in the back, forgetting, if he had ever noticed, the "paid advertisement" warning at the end of the story. He learns that diseases are contracted through the chance picking up of germs which are invisible to the naked eye, and decides that he must have picked up such (notice the tendency to explain the trouble). He hears of the ravages of cancer and is sure that he has that dreaded disease. Of course all worriers do not go this far, but some do and they are instructive. The healthy observer sees the limited knowledge, the concen-

tration upon thoughts that seem to prevent the person from obtaining more and better knowledge, the eager grasping of certain related ideas with the depressing failure to notice other and opposing facts, and the overvaluation of those ideas which are accepted. It is all traceable back to the fear effect and is a beautiful example of distorted thinking.¹

Other Emotional Distortions of Thinking. The selection and course of the worrier's thoughts were emphasized by and were in part aroused by a disagreeable and depressing emotion. Associative selections were re-enforced by the depressing emotion. The qualitative converse of this is to be found in the behavior and experience of the lover. That love is quite as disturbing to the course of thought everyone knows and all are reminded of the fact by every romance read or witnessed. The emotional exaltation is so distracting that the world does not expect lovers to be rational. Like the worrier, the lover dwells upon certain ideas to the exclusion of others which he will some day learn are of equal importance. To these ideas accrue yet other ideas of like emotional tone until such a fabric of delightful dreams is woven as makes all the world to smile. Sometimes lovers are called irreverently "poor fools" and "deluded lovers" (note the word deluded); sometimes friends are unwise enough to attempt to reason with them, to bring them to saner ways of thinking, but usually with no more success than attends the efforts of those who try to reason worriers out of their net of depressing ideas.

The mechanics of thought, or reasoning, if they may be so designated, are the same in love as in worry, but one is dominated by a depressing while the other is governed by an exalting emotion. Both result in distortions of thinking, distortions dependent upon the selective influence of a particular emotion supplemented by the habit-forming process. Other emotions may have similar effects. Chronic anger or hate produces dis-

¹ A happy popular presentation of worry will be found in the following: Walton, G. L., *Why Worry?* Phila., Lippincott, 1915. Pp. 275.

tortions of thought all too well known. The term emotion has so far been used in a very general sense, but if one proceeds to classify and to observe the effects of complex emotions and sentiments (after the fashion of McDougall) then one will find a vast amount of distortion of thought by the emotional influence in phases of life not usually so considered. Normally these are called prejudices or loyalties, but the relationship of the course of thought in such prejudices or loyalties to the course of thought in worries and loves should not be omitted. The normal shades very gradually over into the abnormal.

Distinction between Normal and Abnormal. This is a peculiarly difficult distinction to make. At best it can be only arbitrary and for convenience in the borderline states and stages. Bernard Hart suggests that the distinction can best be phrased in terms of the exaggeration of normal processes, the degree and dangerousness of the anti-social conduct, and the extent of failure to recognize the absurdity of held beliefs when confronted by evidence which should be fully convincing.¹

It is the last of these criteria that is of most interest to the psychologist. He is willing to leave to the physician and the sociologist the determination of what shall be accepted as normal, and the matter of dangerousness to others is a medico-legal problem, but the failure to check with the facts of experience and to perceive what to others would be obvious contradictions is clearly a psychological problem. Our much discussed lover in the heights of his ecstasy cannot be brought to consider facts, to compare his gorgeous ideas with the actualities of life, because he is for the time being so absorbed that facts cannot command his attention. His friends smile, however, because they know from similar experience that in a little while the mundane world will get his attention, that he will see the contrast between his dreams and the facts of life and come down out of the clouds. The worrier case might in the earlier stages have been shown the contrast between his ideas and the

¹ *Psychology of Insanity*, pp. 141, et seq.

facts and be led to recognize the absurdity of his notions; but after the notion of cancer had become well established it might have been impossible to argue him out of it. His attention might have been obtained for a presentation of the facts concerning cancer and the absence in his case of the most important symptoms, and yet he would go off insisting upon his own ideas, failing to recognize their absurdity. If the lover never did come down out of the clouds, or if he persisted in believing his grandiose notions in spite of the presentation of contradicting facts, then we should say, as of the worrier, that he was suffering a delusion.

Nature of a Delusion. When thinking becomes so badly distorted that the thinker fails to check up with reality he is said to be deluded. (Recall the similar test of abnormality in the discussion of hallucination and abnormal illusion.) The more exact definition of delusion is somewhat troublesome because the word has been used with varying shades of meaning. It is often confused with a false perception, or abnormal illusion, and it is not infrequently confused with hallucination. Fundamentally the delusion is a false belief, which persists in spite of normally convincing contradictory presentations. Abnormal illusions may be caused by or be supplemented by delusions. Hallucinations are often associated with delusions, stimulating the delusions originally or stimulating their further elaboration. This form of distorted thinking is one of the most conspicuous features of the diseased mind. Innumerable examples of it are available, and in many forms. There are delusions of reference in which the patient believes that every little event of the day, even the sight of people in quiet conversation across the street, has some reference, probably sinister, to himself; there are delusions of persecution in which the loss of a hammer, the accidental tearing of a dress, the sound of a distant typewriter, the locking of a door, the passing of a policeman, are all interpreted as meaning some organized effort to annoy; there are delusions of explanation which apparently offer a reason for

the persecutions; there are delusions of greatness in which the patient figures as being the true queen of Japan, the wealthiest person on earth, the ruler of the universe, the missing scion of a royal house; there are depressive delusions of having committed the unpardonable sin, of having been the cause of the death of all the patient's relatives, and the like; and there are somatic delusions of having a ton of lead in the stomach, angels knitting in the abdomen, or of having no abdomen or stomach. These have been variously listed and classified. Sometimes the patient manifests little but a persistent belief in some patently absurd notion; sometimes delusions are elaborately developed and the patient will have a long story to tell.

Paranoia. The presence of delusions usually leads to the classification of a patient as a case of paranoia or as paranoid. The use of these terms must, however, be carefully guarded. There was a time when paranoia indicated a large group of the mentally diseased. Records in hospitals for the insane listed many as paranoias. But with the advancing knowledge of mental diseases fewer and fewer cases are being so classified. As defined today paranoia designates "cases which show clinically fixed suspicions, persecutory delusions, dominant ideas or grandiose trends logically elaborated and with due regard for reality after once a false interpretation or premise has been accepted. Further characteristics are formally correct conduct, adequate emotional reactions, clearness and coherence of the train of thought."¹ A pure case of paranoia is supposed to have no other defect than the paranoia. There is no dementia, no hallucination, no emotional disturbance. The following is a good illustrative case:

Male 60 yrs. of age. History negative. Twice married. No information available concerning the first wife. Divorced from the second wife, by whom he had four children all of whom are reported to be normal. Lived alone. By

¹ Rosanoff, 6th ed., p. 636, def. by George H. Kirby. (Quoted by permission.)

occupation a laborer and small farmer. Health generally good. Claims that for eleven years prior to admission he had been persecuted in various ways; once hunters came around his place, that he had to go to town to sell his milk and was therefore unable to watch his place and protect it. Cattle were stolen and killed, he thinks, by these persecutors. Later a man living near by was seriously injured by an explosion which took place mysteriously in his stove, apparently due to dynamite which had somehow been placed there by some one. Patient denies having anything to do with it but says that the injured neighbor was one of his worst enemies. A stick of stove wood exactly like that used by the injured man was, however, found behind a dresser in the patient's house, and this stick of wood had been loaded with dynamite. Observation in the hospital indicates no mental deterioration; intelligence well preserved; considers other patients insane; is quiet about the ward. Since admission he was once found to have secreted bits of glass in his bed and had attempted to pry open a window.

While paranoia in its pure form does not appear frequently in hospitals, as one feature of other forms of mental disease it is quite common. In the chapters presenting the psychoses¹ delusions are frequently mentioned, but as they are accompanied by other mental disturbances the patients are not classified as paranoidias. They are designated as paranoid states, or paranoid forms of some one of the many disease forms given.

Special attention should be called in the definition quoted above to the statement that after the false premise or interpretation has been accepted the mind seems to work otherwise as a normal mind. A patient may be an able architect, may be a fairly competent mathematician, may be a good business organizer, manifesting rather exceptional ability to think and to think well, apart from the subject matter of the delusion. In fact the delusion itself is often more logical than the casual ob-

¹ Chapters X, XI, XII.

server is likely to infer. It is not surprising that a mind convinced that every little detail of life bears some reference to itself should interpret such events as of a persecutory nature. This leads the patient to an extraordinary watchfulness, a perceptive preparation or attitude which accentuates the personal and the disagreeable. Persecutory significances are thus perceived where a person with a normal attitude would not perceive a personal or malevolent meaning. This constant attention to their persecution quite naturally raises the question of why they should be so persecuted. Then delusions of interpretation or explanation appear, and if one could grant the fact of the persecution their reasoning is not so illogical. Surely, they think, there must be some reason for this constant persecution; they must be persons of more significance than they had hitherto supposed. Stories of lost heirs of wealthy or royal families come to mind and then the conclusion is that they themselves must be such, people of really great social importance whose destruction is desired by their enemies. Thus they become convinced of their greatness and there is the long list of royalties, rightful heirs to great fortunes, emissaries of God, and the like, so familiar to all who are much in contact with the insane.

The student must not suppose for a moment that such a course of reasoning as this is to be found or assumed in the history of all deluded patients; far from it. Sometimes the conclusion is not in an idea of grandeur but in some notion of extreme worthlessness. Complicating factors frequently if not usually enter in so that the course is side-tracked, stopped at some stage, or otherwise altered. In the course of the patient's brooding over his troubles and seeking in his past an explanation therefor, there is likely to be much retrospective falsification of his memories of the past. The phenomenon described in an earlier chapter as retroactive paramnesia is here operative. Not infrequently the delusions of persecution make the patient somewhat dangerous. The persecution may be endured for a time but eventually there may be rebellion against

it; especially is this likely to occur if the patient develops well-systematized delusions of explanation to the point that he settles upon some certain person or persons as the cause of all his troubles. He may then try to destroy that supposed cause.

Figures on the frequency of paranoia are probably misleading because they are of necessity confined to hospital records. There are doubtless many at large who never have crossed and perhaps may never cross the threshold of a hospital and so be recorded for what they are. If the delusions are relatively harmless no protest is made and they continue at large. They are known in their communities as "mildly cracked," a "little bit off," or as "monomaniacs." Some of them are very harmless indeed, their activities merely causing a smile of pity in those who know. Some of them have a little money to spend and regularly flood the mails with mimeographed, sometimes printed, expressions of their wholly worthless opinions on anything and everything. Such are many fad-dists and cranks. Some are more active and are chronically anti-this or anti-that or ardently pro-the-other-thing. While they are relatively harmless they nevertheless cost society much unnecessary disturbance. In a comparatively recent instance a woman who had been actively speaking and organizing for now one cause and then another, all of a somewhat eccentric nature, proved eventually to be of a long family line of mentally diseased, and she herself eventually developed delusions so bizarre as to be generally recognized for what they were.

Another form of delusion results in what is sometimes described as the "querulent paranoiac." These people are a menace, and unfortunately may be for a time difficult of recognition. They chronically bring accusations against worthy people, write lengthy letters of complaint to the authorities or others more likely perhaps to take cognizance of them, and not infrequently sue for damages for large sums. They apparently have no hesitation about the faking of evidence and are often rather clever in so doing. A female querulent may accuse some

respectable man of improper relations, charge him with assault, swearing to a most incriminating list of details. The consequence is often very expensive to the accused man, both financially and in public esteem, because unfortunately the public is far too willing to believe such accusations.

Abnormal Extraversion and Introversion. One other distortion of thought merits inclusion here, and that is chronic or abnormal introversion or extraversion.¹ These terms came from the study of abnormal minds. It was first observed that certain forms of insanity were characterized by a withdrawing from the world and a preoccupation with the patient's own thoughts or daydreams. (See discussion of dementia præcox.) The psychoanalysts think in terms of some stream of energy which they usually term the libido. This may be turned in any direction and be broken up and applied to a great variety of aspects of life, in fact all of our activities they think of as forms of libido or whatever concept the particular psychoanalyst may substitute for libido. Now this libido, presumably, by their theory may be turned outward upon the realities of life or inward away from the realities of life. They do not very well define reality, a difficult philosophical problem, but the reader gathers gradually that by reality they mean the plain unvarnished facts of life whether they be pleasant or unpleasant. Most of us face these facts of life, struggle with them and achieve what we can with and in spite of them. Some who are mentally diseased, notably the dementia præcox, give up the struggle and eventually are quite content to sit on a bench in a hospital ward day in and day out. They live in a world of fantastic notions and are chronically like ourselves when we for a moment lapse into daydreams. Such complete withdrawals from reality as they are termed indicated to the psychoanalysts that the libido was turned inward, away from reality, and hence gave rise to the term introversion. This turning inward away from reality is sometimes called a "flight from

¹ See introductory discussion of this subject in chapter I.

reality," they flee from the troubles of life into a world of dreams. It was also observed that occasionally there are people who when confronted by what seem to be intolerable situations in life do not fly from reality into a world of dreams but in quite another way avoid facing the disagreeable facts of life. The case of the exhausted person, mentioned at the beginning of this chapter, who refused to listen to all argument in his behalf but rushed ever more frantically into more and more work, is a case in point. He would not face the disagreeable facts but rushed away from the facts into, not daydreams, but greater activity or more intimate contact with the outside world. This was likewise dubbed a flight from reality, but as it was in what might be called the opposite direction from that taken by the dementia præcox it was called extraversion.¹ Still later it was observed that normal minds could be classified as extraverted or introverted and then the terms came to be used confusingly for both the normal and the abnormal. The writer has consequently suggested that it would be better to designate the abnormal forms of introversion and extraversion as para-introversion and para-extraversion; because their distinction from the normal is obviously in their distortion, they are incapable of voluntarily swinging back to their normal relationship to reality. The normal mind has periods of both introversion and extraversion, and the state which is most common to an individual is what characterizes him as either a normal introvert or extravert. And the normal mind swings easily from one to the other. This the abnormal introvert or extravert cannot do and hence it is to be thought of as a distortion of thinking. Both abnormal introversion and abnormal extraversion manifest delusions, which still further justifies their recognition as distortions of normal modes of thought.

Summary of Causes. The causes of distorted thinking appear to be numerous. But they are not well known. Perhaps

¹ The earlier literature used the spelling *extroversion*, but the later literature substitutes the better orthography, *extraversion*.

if they were better understood they would not seem to be so numerous, but that will remain for future study to reveal. First of all it seems clear that cortical degeneration can be a cause, or at least a contributing cause, to the development of delusions. Certainly in general paralysis, which is well known to be accompanied by marked tissue changes in the cerebral cortex, there are marked delusions. Emotional depression, which is now usually thought to involve a derangement of the endocrine system, has a marked effect upon the course or content of delusional development whether it eventually proves to be the cause or not. Melancholiacs have delusions of committing the unpardonable sin and the like, of a nature to correspond to or to explain in a way their depression. Patients who are emotionally elated have quite other delusions, of greatness, great discoveries, great wealth, and the like corresponding to the quality of their emotional disturbance. The presence of illusions and hallucinations contributes to delusional development. Often the delusion is in the nature of an elaboration or of an explanation of the hallucinations experienced. Amnesias may in like manner stimulate delusory development, either as an explanation for the amnesia (rationalization) or to supply the gap in memory. It is also possible that still other organic defects contribute to the delusion. Southard found in a most ingenious series of studies that the nature of somatic delusions, as for instance the delusion of "stomach full," could in some instances be correlated with organic structural disorders.¹

The contribution of a complex to the production and stabilization of distorted thinking is not yet clear. There are those who believe that in the formation and functioning of a delusion the presence of a complex is established beyond question. They conceive of delusional thinking as comparable to the behavior of psychoneurotics who manifest obsessions and phobias and compulsive acts.² There must be, they say, the presence of

¹ Southard, E. E., "On the somatic source of somatic delusions," *J. Abn. Psychol.*, 1912-13, 7, 326-339.

² See presentation in chapters V and VI.

conflicts within the personality, and repressions of something which finds abnormal expression in the delusion. Others are more cautious and think that such an application of psychogenic interpretation is without adequate foundation. Paranoias have so far been much more resistive to analytical treatment than have the phenomena of the psychoneuroses. That may indicate a defect in the interpretation and it may merely indicate an imperfectly developed therapy. Hence the extent to which the concept of the complex and all that it connotes can be used in this connection remains to be seen in spite of the enthusiastic claims which some make for it.

There is also the possibility that cases of pure paranoia begin life with some inherent defect. Perhaps there is a natively constituted personality which is peculiarly susceptible to maladjustment and the development of delusions. This is also comparable to the interpretations of the psychoneuroses. And yet it may be that paranoia and the paranoid aspects of other diseases rest entirely upon functional disturbances. It has been most earnestly argued that all of the organic conditions to be found in dementia præcox are the consequence of the introverted thinking and not the cause of the peculiar mental life, and that the introverted thinking is a distortion by undesirable complexes. And it might of course be that an undesirable complex caused the emotional depression which in turn caused delusions of explanation, or that the emotional elation leading to delusions of greatness was aroused by a forgotten (repressed) complex. Some of these possibilities seem to be extreme, if not absurd, but it is wise to consider them because they are under discussion and because the extent of the influence of the complex in the distortion of thinking is not fully appreciated.

SELECTED REFERENCES

- Bleuler, Eugen, *Textbook of Psychiatry*. New York, Macmillan, 1924.
Section on paranoia.

- Church, A. and Peterson, F., *Nervous and Mental Diseases* (9th ed.). Phila., Saunders, 1919. Section on mental diseases, Chap. X.
- Conklin, Edmund S., "The definition of introversion, extroversion and allied concepts," *J. Abn. & Soc. Psychol.*, 1923, 4, 367-382.
- Haines, T. H., "The genesis of a paranoic state," *J. Abn. Psychol.*, 1916-17, 11, 368-395.
- Jung, C. G., *Psychological Types*. New York, Harcourt, 1923. Chap. X.
- McDougall, Wm., *Outline of Abnormal Psychology*. New York, Scribner, 1926., Chaps. XX, XXVIII.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Part II, chap. V.
- Southard, E. E., "On the somatic source of somatic delusions," *J. Abn. Psychol.*, 1912-13, 7, 326-339.
- Stoddart, W. H. B., *Mind and its Disorders*. Phila., Blakiston, 1912. Chap. VIII.
- Störing, G., *Mental Pathology in Its Relation to Normal Psychology*. London, Sonnenschein, 1907. Lecture 19.
- (Various), "Symposium on the relations of complex and sentiment," *Brit. J. Psychol.*, 1922, 13, 107-148.
- White, W. A., *Mechanisms of Character Formation*. New York, Macmillan, 1916. Chaps. IV, X, XI.
- White, W. A., *Outlines of Psychiatry*. New York, Nerv. & Ment. Dis. Pub., 1919 (7th ed.). Chap. VIII.

CHAPTER X

MAJOR FORMS OF ABNORMALITY

INTRODUCTION TO TERMS, SCHIZOPHRENIA (PARANOID, CATATONIC, HEBEPHRENIC, SIMPLE, MIXED, DEMENTIA PRAECOCISSIMA, EXPERIMENTAL STUDIES, THEORY), PARESIS, SENILE DEMENTIA, OTHER DETERIORATING STATES.

In this and the two chapters immediately following are presented the psychological aspects of the major forms of mental abnormality. Sometimes these have been called the insanities; but the term insanity is one which must now be used with care. It is neither a medical nor a psychological term. The meaning conveyed by it today is properly legal and sociological. Persons adjudged insane are socially inadjustable, incompetent, irresponsible or irrational. The cause for this condition may be found in a great variety of diseases and personal histories. At the same time persons not legally insane may be sufferers of mental disease. In the eyes of the law they may be competent, responsible and rational, and yet they may be obviously abnormal. Hence for psychological purposes it is wise to drop the term insanity, except perhaps in some fields of social psychology.

Introduction to Special Terms. Certain features of these major abnormalities necessitate the use of special terms with which the student should rapidly become familiar. Important among these is *dementia* which has long been used to designate an enfeeblement of all mental life. As so used it implies that the patient had formerly a normal mind and that the enfeeblement is subsequent. The enfeeblement may affect any or all of the familiar intellectual functions. Memory may be poor or defective, association does not function normally, concepts do

not form with normal facility, judgments are consequently inadequate, external situations fail to produce the perceptions and other reactions of the normal mind, and the emotional reactions are inadequate or inappropriate or lacking altogether.¹ Dementia is sometimes the sequel to acute mental disturbance and it is then referred to as secondary dementia; when, however, a mental abnormality is characterized from the outset by deterioration or enfeeblement it is customarily termed a primary dementia.

Dementia must be sharply distinguished from *amentia*, which designates an enfeeblement of mind dating from birth. The ament never was normal and in this respect is different from the dement, although in particular psychological functions they may appear much alike.

The term *psychosis* is frequently used in connection with these major abnormalities. By this term psychiatrists ordinarily mean a certain state or pattern. And it ordinarily designates a much more extensive disturbance of the personality than is found in the psychoneuroses. Frequently it appears with such qualifying terms as epileptic or alcoholic or manic-depressive, and when so used there is designated a special pattern of abnormality which has been studied and classified. Some authors prefer to limit the use of the term psychosis to those symptom groups where accompanying anatomical morbidities are either unknown or assumed to be non-existent and where the sufferer fails to recognize his diseased condition,² but the tendency in the United States is toward a much more inclusive use of the word.

Orientation refers to the apprehension of the environment and of the patient's own relation to it. This is ordinarily considered to have three phases or features: apprehension of time, apprehension of place, and apprehension of persons. When any

¹ The reader will find in the following an excellent presentation of the psychological characteristics of dementia: — Wiersma, E. D., "Psychology of dementia," *J. Ment. Sci.*, 1930, 76, 1-42.

² Stoddart, W. H. B., *Mind and its Disorders*, 3rd ed.

one or all of these are defective the patient is said to be *dis-oriented*. A patient may have an utterly erroneous notion of the year and season and date and is therefore said to be dis-oriented in time; he may have a completely false notion of the place in which he is living and of why he is there and then he is said to be disoriented for place; his notions of who his associates are may be very far from the facts and then he is said to be disoriented for persons.

The possession or retention of *insight* means that the patient is aware of his diseased condition. Many patients appear to be quite unaware of anything wrong with them, and they are said to lack insight.

Schizophrenia. Formerly this was known as *dementia præcox* and there are still many who prefer not to change to the newer term. Sometimes it is referred to as primary dementia. In every hospital for the mentally diseased there are large numbers of patients presenting this pattern of abnormality. While the frequency varies somewhat from state to state and according to the bias of the medical staff in the classification of borderline varieties,¹ it seems safe to think that approximately twenty-five per cent of admissions are of this kind.²

Older cases are to be seen in every hospital sitting about the wards doing nothing and often in strange attitudes. Sometimes they repeat for a long time some stereotyped movement. Again without any apparent warning they will get up and move to some other part of the ward, sing a song, or ejaculate some few

¹ For the scheme of classification used in the United States of this and all forms of mental disease see Rosanoff, A. J., *Manual of Psychiatry* (6th ed.), pp. 627-638 or Noyes, A. P., *Modern Clinical Psychiatry*, pp. 135-136. For the most recent revision see the *Statistical Manual for the Use of Hospitals for Mental Diseases* (6th ed.), pub. by Nat. Comte. for Mental Hygiene, 1934. Pp. 59. A new scheme of classification has recently been adopted in England. This will be found in Flemming, G. W. T. H., "The revision of the classification of mental disorders," *J. Ment. Sci.*, 1933, 79, 753-757.

² For an excellent presentation of statistics on this and all forms of mental disease, see May, J. V., *Mental Diseases*; and on schizophrenia especially May, J. V., "The dementia-præcox-schizophrenia problem," *Psychiat. Quart.*, 1932, 6, 40-88.

words, perhaps repeating them frequently. Observation will reveal that their emotional reactions are peculiarly abnormal. When feeling should be aroused there seems to be none. With the progress of the disease this apathy becomes characteristic. At other times when they should be sad they are happy; when they should be happy they are sad. Their emotional reactions are tantalizingly unaccountable. Delusions are common and often most bizarre. One may be found to believe himself placed in the hospital as a special agent of the secret service and another that she is a member of some royal family there to settle some case and that her associates constitute the juvenile court. These delusions are not infrequently complicated with hallucinations. Yet in spite of their delusions such patients are usually well oriented.

Changes in the use of language frequently manifest the deterioration (or alteration). In early stages the patient may continue to speak and write with fair coherence and intelligibility; but with progress of the psychosis both coherence and intelligibility progressively disappear. The use of language may eventually become so disturbed as to justify the term "word salad" so often used. A good example of the word-salad form follows:

central criminal law services supreme court branches trees
great authority by verdict conduct criminal law of the
supreme-court on the branch trees had for the control of
prosecutors who was consider of service by crimes so many
convicts. Very affair of authority by direct for powers of
judge-eagle, etc., etc.

Sometimes the language disturbance becomes even worse than that of this example. It may become a mere jumble of meaningless syllables, or a prolonged repetition of some word or phrase. Such a jumble of syllables is termed a verbigeration and is functionally allied to the stereotyped postures and movements mentioned above.

In addition to these stereotypes of speech and movement the observer's attention is often attracted by other peculiarities of motor behavior. Sometimes there is much movement, even to the point of excess and for no apparent reason; again there may be little movement, even to the point of resistiveness, sitting continuously in one position or lying in bed and refusing to do anything, even to eat. Occasionally this refusal to move takes a peculiar form known as "waxy flexibility" in which there is no resistiveness to the movement of the limbs or body when done by another and yet when so moved by another the position into which they have been moved is persistently retained until moved into some other position.

Memory may be markedly defective, especially for recent events. But the extent of the memory, as well as the content and nature of the entire mental life of the schizophrenic, is difficult to get at because they live so much within themselves and are so unresponsive to external presentations. This might be described as a peculiarity of interests which dominate attention, if one were wholly certain that such were the explanation. But this apparent living within themselves, in their own fantasy life, has been given much attention and much thoughtful consideration by students of the subject. Frequently it is possible to trace the beginnings of this trait far back of the onset of the psychosis. Persons manifesting it are described as having a "shut-in" personality.

Schizophrenic patients are frequently found to be far less demented than casual observation leads an observer to suppose. They are sometimes found to be quite well aware of current events if the examiner insistently forces himself and his queries into the attention of the patient. But after such an intrusion the patient relapses quickly into the abstracted or absorbed state from which he was disturbed by the examination. This peculiarity reveals nevertheless that the so-called dementia may be more apparent than genuine.

In addition to the question about the actuality of the de-

mentia, there is also a question about the older notion of its precocity or early appearance. It was called dementia præcox because it was supposed to be a dementia which characteristically appeared early in life and in its course was on the whole comparable to the deteriorations known in later adult years and in old age. But it is now recognized that the pattern of abnormalities once thought of as dementia præcox does often appear long after adolescent years are passed. The age of hospital admissions shows that far more than half are past twenty-five years of age, many of the admissions occurring in middle life. It might of course be argued that the age of admission is often much later than the actual age of onset; but, even granting that, there is still far too wide a margin for these cases after maturity is reached to permit the generalization that this is a disease of adolescence characteristically. The result of all this has been an increasing dissatisfaction with the old term dementia præcox. Others have been suggested but the one now most commonly preferred is that of schizophrenia, which appears at the beginning of this section. It literally means a cleavage or splitting of mind and is accepted by many because of the belief that the peculiarities are attributable to a break-up of pattern relationships or organization within the personality.¹

Studies of the schizophrenic pattern of abnormality are ordinarily related to a scheme of classification which assumes the existence of four variant patterns. These differ from each other not in their essentials but in the prominence or conspicuousness of certain features. They are known as the paranoid, the catatonic, the hebephrenic, and the simple forms of schizophrenia (or dementia præcox).

If much elaborated delusions, ordinarily accompanied by active hallucinations, are the salient feature of the pattern, then

¹ For an instructive historical study of the subject the reader is referred to May, J. V., "The dementia præcox-schizophrenia problem," *Amer. J. Psychiat.*, 1931, 11, 401-446.

it is classed as the *paranoid form*. The following clinical description taken from hospital records is an example:

Female, 25 yrs. Has four brothers and two sisters all reported healthy. Mental capacity low, patient did not finish 7th grade. Habits good. Worked as a domestic for six months in home of a prominent attorney. Subsequently worked intermittently in various places, public laundry, on father's farm, etc. Longest steady employment being a year and a half. Very saving of her earnings. Did not go out with other young people, lived to herself, not dissipated. About two years ago began to receive telephone messages (evidently hallucinatory and delusory, as she still claims to receive these even in the hospital) and became convinced that she was to marry the son of the attorney for whom she formerly worked. When she worked there this son was a child seven years her junior. She had not seen him since, except possibly in a parade. The telephone messages told her that he was in love with her and she realized that she was in love with him and had been since she first saw him. Made frequent visits to office of the attorney, the boy's father, claiming receipt of messages asking her to come. When told that she had not been sent for and that she should give up such ideas she thought that they were testing her loyalty. Patient convinced that attorney had her watched by detectives for her protection, that they knew just when she went to bed, when she got up, what she said to the landlady, and her every move. She claims that she continues to receive messages from the boy and his relatives and that they are to be married in June, that the attorney's family have been interested in her ever since she worked for them. She appears to be strong and in good health, sleeps well. Is generally happy, at least contented, although there are occasional periods of depression and she has threatened suicide. She realizes that there is opposition to the marriage and says that this has kept her from obtaining employment, but that the real reason why she could not get a job is because the attorney

did not wish her to associate with common people. Is quiet and orderly. Memory good.

Where motor peculiarities are the prominent feature of the pattern, it is termed the *catatonic form* or *catatonia*. These manifest conspicuously the muscular resistiveness, stereotypy of movement and expression. Occasionally there are interruptions by spells of marked activity, impulsive acts which appear to be very silly indeed. Extreme states of negativism are termed catatonic stupors; while correspondingly extreme periods of activity are designated as catatonic excitement. Sometimes there are such alternations of catatonic stupor and catatonic excitement as to make the schizophrenic pattern resemble the manic-depressive psychosis. (Described in chap. XII.) The following case description presents fairly well the more common features of the catatonic:

Female, 19 yrs. Brother insane. Patient appears to be strong and well nourished. Has been deranged for at least two years. Symptoms appeared rather gradually. At first she appeared peculiarly dull and morose, then she refused food, heard voices speaking to her and became indifferent to all proper occupation. In the hospital she is quite resistive, refuses food or will accept it and then throw the contents of the tray about. Acts and expressions without any apparent motivation are frequent. Evidently they are in response to hallucinations. Unless restrained she will frequently and suddenly remove all clothing. Again she appears to be listening carefully, will often wink or frown or laugh without apparent cause. At times she will ejaculate with such phrases as "I can't hear the coach talking. Did I go to sleep? (Laughs). You'll never get your nickel that way. All right, brother. I beg your pardon, Dr.—. (Whistles and laughs)." Seems to be living in a world wholly different from her actual surroundings. Although usually resistive she is occasionally excited and incoherent.

When the schizophrenic patient appears to the observer to be conspicuously silly in thought and action the case is classed as one of *hebephrenia* or the *hebephrenic form* of schizophrenia. To the observer the ideas expressed appear to be absurd and illogical. If they can be called delusions, they are noticeably changeable. Such patients will be found smiling and grimacing at apparently nothing at all. The following represents the clinical descriptions of this form:

Female, 25 yrs. School teacher for several years, single, family history negative. Derangement appeared about a year prior to admission to the hospital. Was an able musician and still plays occasionally. Is restless, impulsive, and at times irritable. Talks incoherently and excessively. Is pleasant and kindly disposed one moment, very irritable and sarcastic the next. Moods change easily and without apparent cause. Laughs often and without cause, ejaculates phrases which are wholly inconsistent with the present situation, cannot or does not fix attention. There are sudden outbursts of anger and violence, striking and injuring other patients. Is unreliable at all times. Insight is poor. Her memory is confused for the immediate past, but for her earlier life it is good.

What is known as the *simple form* (formerly termed dementia simplex) is peculiar for its lack of any differentiating characteristic. Such a patient's history reveals little that can be thought of as indicative of future mental disturbance. After what appears to be a relatively normal life the patient gradually changes, becomes indifferent to any and all responsibilities, is increasingly apathetic and thoughtless. If delusions develop and hallucinations appear, there is little discoverable evidence of them. The following is a typical case:

Female, 21 yrs. Family history negative. Went to school as far as middle of second year of high school, later progress was poor. Tried to go to a college as a special student, but was unable to keep up. Became discouraged

and nervous. Acted strangely and indifferently. Disappeared from home. In the hospital her adaptation to the surroundings is poor. Her movements are quick but unobtrusive. She is unable to work, is dull and indifferent, often found hiding in corners. Says that her own mental state has changed since the age of fourteen, indicating some insight. Says she found school work difficult and that she was unable to associate with others. At 16 she met a young man who escorted her home and kissed her good night. She longed for his return but never met him again. This may be but one of her phantasies of which she has a variety although they are not apparently very numerous. She says that at one time she thought men and boys followed her. Is quiet, answers promptly, although sometimes her answers are irrelevant, seeming not to have understood. There is no evidence of hallucinations, the memory is good, and she is well oriented.

In addition to these four forms one will frequently find references in the literature of psychopathology to a so-called *mixed group*. Under this heading are sometimes classified forms of schizophrenia which manifest prominently the distinctive features of two or more of the above-mentioned forms. A single case may, for example, manifest so much negativism that it looks much like a catatonia and yet at the same time manifest so much silliness as to make one wish he could put it in the hebephrenia group. Under such circumstances differentiation and classification is very difficult. But such circumstances are very common. As a matter of fact the clean-cut textbook type of case occurs rather infrequently. The general run of schizophrenia admissions to any hospital do not fit readily into these four classes. Most of them seem to be bordering cases between two of them or still more complicated mixtures. Psychologically this means that the forms described are not types but merely variations of the schizophrenic pattern of personality development.

It has already been stated that the age of onset of schizo-

phrenia can no longer be thought of as confined to the adolescent years of life, but that it is quite as likely to develop after maturity has been achieved. Contemporary presentations ordinarily assume that schizophrenia does not appear prior to puberty. Some even state with apparent confidence that it does not occur in childhood. This is now open to serious question, however. A few studies have been published of children who appeared to develop normally for a time, one or two years only in some cases, and then to deteriorate or to develop patterns as much like schizophrenia as could well be expected of a child. Those who still hold to the dementia terminology designate these as cases of *dementia praecocissima*.¹ If these prove to be genuine schizophrenias then the conclusion will of necessity follow that no period of life is immune to the possibility of this form of abnormality. It will also mean another inroad upon the concept of feeble-mindedness, for it may be that some or even many now classified as feeble-minded are actually instances of childhood schizophrenia (*dementia praecocissima*).

Psychological studies of schizophrenia *by test* or *experimental* methods have been attempted, although they are still too few for much certain generalization. On the assumption that schizophrenia cases manifested a genuine dementia, efforts have been made to measure the decline of intelligence. Scores have been obtained which are interpreted as evidence of such deterioration.² The withdrawn or shut-in or introverted nature of the schizophrenic personality has been tempting to those who like to work with personality questionnaires; but their results are far from satisfactory. Sometimes the schizophrane cases

¹ Most of these have appeared in foreign journals. A more accessible study, with references, is the following: Potter, H. W., "Schizophrenia in children," *Amer. J. Psychiat.*, 1933, 12, 1254-1270.

² The reader will find a good introduction to this literature through the following: Babcock, H., *Dementia Praecox: a Psychological Study*. Lancaster, Science Press, 1933; Gardner, G. E., "The learning ability of schizophrenics," *Amer. J. Psychiat.*, 1931, 11, 247-252; Schwarz, R., "Measurement of mental deterioration in dementia praecox," *Amer. J. Psychiat.*, 1933, 12, 555-560.

have shown high introvert scores, but not always. It is evident that either the basic concepts or the techniques used still require much refinement.¹ The experimental studies of the sleep of schizophrenic patients have been more illuminating. It is instructive to learn that the strange postures, the odd muscular contractions, and other peculiarities of motor behavior disappear when the patient goes to sleep. In fact, the sleeping condition of schizophrenia patients appears to be remarkably like that of normal healthy individuals. Measurements of motility and posture in sleep produce averages and characteristic positions quite like those of normal subjects. Apparently the motor peculiarities of the waking schizophrenic must be attributed therefore to functioning in the cerebral cortex, certainly to the cerebrum. Investigations made by means of the electrical skin resistance techniques have not yet been developed far enough for generalization, although they give promise of becoming highly useful.²

Changes of personality so serious and so curious as these of schizophrenia have served as a powerful challenge to scientists of many kinds to interpret them if they could. At the present time rapid progress toward a satisfactory interpretation is being made but it is still necessary to recognize that highly competent persons differ in their conceptions of the direction in which this progress is pointing. For the purpose of introduction to this discussion these differences of thought may be looked upon as centering around three different trends. One of these assumes that the eventual interpretation will be in terms of

¹ Landis, C. and Katz, S. E., "The validity of certain questions which purport to measure neurotic tendencies," *J. Appl. Psychol.*, 1934, 18, 343-356. Neymann, C. A. and Kohlstedt, K. D., "A new diagnostic test for introversion-extroversion," *J. Abn. & Soc. Psychol.*, 1925, 20, 128-141.

² Dubois, P. H., "Studies of catatonia, III. Bodily postures assumed while sleeping," *Psychiat. Quart.*, 1934, 8, 546-552. Forbes, T. W., "Studies of catatonia, II. Central control of cerea flexibilitas," *Psychiat. Quart.*, 1934, 8, 538-545. Forbes, T. W. and Piotrowski, Z. A., "Studies of catatonia, IV. Electrical skin resistance of catatonics during sleep," *Psychiat. Quart.*, 1934, 8, 722-726. Landis, C., "Psychiatry and the psychogalvanic reflex," *Psychiat. Quart.*, 1932, 6, 262-272.

organic changes in the central nervous system caused by some toxine or a defective heredity. Another believes that the whole thing can be interpreted in terms of a psychogenesis, such as was presented in the earlier chapters of this book for the explanation of psychoneurotic abnormalities. The third mode of thought is in part a combination of these two. It assumes that the interpretation will be found in terms of some basic change in or defect of the central nervous system and that the special forms which any given schizophrenia presents is of psychogenic origin. These require more careful consideration.

For the *theory* that the schizophrenic condition is due to *organic changes* in the central nervous system, satisfactory support is still lacking. So far post-mortem studies of schizophrenic brains have failed to demonstrate peculiarities not to be found in non-schizophrenic brains or changes which might not be due to the methods used in preparing the tissues for examination. Physiological studies of many kinds have been made upon schizophrenes but so far without convincing evidence of findings that could be accepted as the cause of the personality alteration.¹ That an organic cause may still be found is quite within the range of possibility. It is yet too soon for any kind of conclusion on this subject.

That the changes of schizophrenia are basically organic in nature and that the organic changes are due to an inherent defect is a very old idea. And for it there is some evidence worthy of consideration. In its earlier form the belief was that the schizophrenic (dementia praecox as then termed) began life with an intrinsically defective growth capacity. Such a person did not have by nature enough energy for development (whatever that may mean) to carry him through to full maturity.

¹ Bowman, K. and Raymond, A. F., "Physical findings in schizophrenia," *Amer. J. Psychiat.*, 1929, 8, 901-913. Dunlap, C. B., "Dementia praecox," *Amer. J. Psychiat.*, 1924, 3, 403-421. Kure, S. and Shimoda, M., "On the brain of dementia praecox," *J. Nerv. & Ment. Dis.*, 1923, 58, 338-353. Lewis, N. D. C., "Comments on the pathology of dementia praecox," *J. Nerv. & Ment. Dis.*, 1925, 62, 225-260.

As a consequence, such a person could develop only as far as his capacity for growth would permit. When that capacity for development was exhausted, then deterioration would take place, and this was assumed to occur somewhere along in adolescent years. This notion of defective growth capacity was completely set aside by the discovery that schizophrenia can appear well on in adult life, long after the specifically developmental years are past.

But the notion of an *hereditary defect* lingers still, and is of peculiar importance to the psychologist who is called upon to counsel the relatives of those who are schizophrenic. In recent years such an interpretation has received much support from the studies of twins, and especially of identical twins. While these studies are still somewhat unsatisfactory it appears to be true that when one of a pair of twins develops schizophrenia there is somewhat more likelihood that the other will than there is for the development of schizophrenia in the siblings of a schizophrenic. And the trend of evidence is in the direction of indicating that this is somewhat more true in the case of identical twins.¹ This would obviously point to the presence of some influential intrinsic defect in these cases although one could not conclude that such a defect is the only cause of the schizophrenia.

The intrinsic defect theory has also been supported by the studies of body type or habitus in relation to mental disease. In the first chapter of this book a description of these types and of their relation to alleged personality types was presented. It was there pointed out that the schizothymic personality was believed by many to be primarily associated with the asthenic and the athletic physical types (sometimes termed the leptosomic group). In this school of thinking the personality type is supposed to be determined by the same factors that govern

¹ An excellent bibliography of this literature will be found in a chapter by Arnold Gesell in the *Handbook of Child Psychology*, edited by Carl Murchison. See also Parker, G. H., "Identical twins with dementia praecox," *Jour. of Heredity*, 1926, 17, 137-143.

the pattern of physical development. If this relationship could be accepted as established, and there are still many uncertainties about it, it would then be necessary to prove that schizophrenia develops on the basis of a schizothymic personality. If both of these could be established then it would be clear that an intrinsic defect contributes largely to the development of schizophrenia; but it would still be necessary to explain why some schizothymes never develop schizophrenia. Many believe that this whole relationship is so close to final establishment as to justify the practical acceptance of it.

But the establishment of these personality types and of their relationship to physical types is far from complete. There are many mixtures and many exceptions, and the whole concept of type differences is seriously questioned.¹ For a long time it has been good practice to teach that schizophrenes frequently manifested peculiarities, especially the shut-in personality, long before what could be called the onset of the disease. In more recent years there has been a marked tendency to accept the contention that a schizothymic personality preceded the development of a schizophrenia. But that is now being called in question.² If it is possible, as it now appears to be, that many schizophrenias develop without pre-psychotic peculiarities and even without the possession of a schizothymic personality, then it is possible that schizophrenia may not be due to inherent defect. And if that is so other means of explanation will obviously be necessary. Perhaps the schizophrenic condition can be produced in a variety of ways. Many have thought so.

There is also the contention that there is some predisposing inherent defect quite apart from the debatable matters of personality and physical habitus. Textbooks on nervous and

¹ See references on this in chapter I.

² Kasanin, J. and Rosen, Z. A., "Clinical variables in schizoid personalities," *Arch. Neur. & Psychiat.*, 1933, 30, 538-566. Lewis, N. D. C. and Blanchard, E., "Clinical findings in 'recovered' cases of schizophrenia," *Amer. J. Psychiat.*, 1931, 11, 481-492. Page, J., Landis, C. and Katz, S. E., "Schizophrenic traits in the functional psychoses and in normal individuals," *Amer. J. Psychiat.*, 1934, 13, 1213-1225.

mental disease have long stated this. Family histories of primary dementers do show the possibility of an inherited taint in a large number of cases. Figures on this vary, but one apparently able study gives evidence for the possibility of such a taint in about fifty per cent of the cases examined. Studies of the children of schizophrenes are not yet sufficiently numerous nor made with proper controls to be very illuminating.¹

The *psychogenic* interpretation of schizophrenia considers that all organic changes accompanying the disease are actually consequential and not causal. The cause of the distorted personality is thought to be discoverable in the patient's personal history. The characteristics commonly presented as abnormal can all be traced back to their beginning in adjustments to environmental situations which were inadequate. Such inadequate adjustments resulted in others, thus establishing bad habits which accumulated and eventually produced conduct so different as to be pronounced demented. Psychoanalytic thinking has here been enormously influential. That scheme of psychogenic thinking already used in the interpretation of the psychoneuroses can be applied here, with certain differences of emphasis which account for the differences in the personality. The schizophrenic is frequently thought of as suffering a fixation at a very low level, usually the narcissistic level. All succeeding problems and stages of life are met with the distorting effect of this fixation. Puberty and the social demands of adolescence contribute their share to the twisting of the personality development. An awareness of incapacity is conspicuous and highly influential. More and more there is the tendency to retreat from the troubles of reality into the comforts of a world of

¹ Lampron, E. M., "Children of schizophrenic parents; present mental and social status of one hundred and eighty-six cases," *Ment. Hyg.*, 1933, 17, 82-91. Myerson, A., *The Inheritance of Mental Disease*, chap. VII. Bleuler, M., "A contribution to the problem of heredity among schizophrenics," *J. Nerv. & Ment. Dis.*, 1931, 74, 393-467. Pollock, H. M., Malzberg, B. and Fuller, R. G., "Hereditary and environmental factors in the causation of dementia praecox and manic-depressive psychoses," *Psychiat. Quart.*, 1934, 8, 77-97, 337-371, 553-599.

fantasy. As the psychoanalysts like to put it, the ego gives up the battle and retreats, permitting the unconscious impulses far too much freedom to dominate consciousness and behavior. Indifference to the outer world appears, and all the other peculiarities of the schizophrenic. Complexes distort the thinking and the feeling reactions. The content of the conditions governing attention is so different from that of normal minds that he is said to be absurd, incoherent, unintelligible. According to this interpretation the symptoms would not be so queer and unintelligible if the examiner were in possession of the entire mental history of the case.¹

Perhaps the most widely influential scheme of interpretation for the schizophrenic problem today is that suggested by Bleuler, which is essentially a combination of the two preceding theories. Of this there are many forms but only their general nature can be included here. There is the assumption of an organic defect, probably intrinsic, which accounts for the lack of control, defects of association, inadequacy of integration, and the disconnected reactions. So much is organic. It may be progressive for a time and then cease to change further. It gives to the sufferer a consciousness of inadequacy. All the rest is of psychogenic origin. In other words, the basic cause of the schizophrenic condition itself is conceived to be an actual organic peculiarity or change, admittedly not yet demonstrable, while the special forms or patterns developed by any given patient are attributable to a psychogenesis.²

It might properly be thought that one or other of these interpretations could be proved through the success or failure of methods of treatment developed around them. Progress in that direction is being made, but the situation still holds confusing and complicating factors. Modern methods of treatment most

¹ Hassall, J. C., "The role of the sexual complex in dementia praecox," *Psychoanal. Rev.*, 1915, 2, 260-276. Jung, C. G., *Psychology of Dementia Praecox*, New York, Nerv. & Ment. Dis. Pub., 1909. Pp. 153.

² Bleuler, E., "The physiogenic and psychogenic in schizophrenia," *Amer. J. Psychiat.*, 1930, 10, 203-211.

certainly do restore many schizophrenes to a fairly normal adjustment to social life. But it is also generally admitted that most of these carry with them through life some peculiarities, some scars as it were, as consequences of the experience. Psychiatrists today are far from feeling as helpless when confronted by schizophrenia as they did twenty-five or even fewer years ago. Still a very large portion of these patients do not recover, do not even respond to the best available methods of treatment. Many are neglected until the condition is so thoroughly established that no known method can be effective. Those who contend for an hereditary defect and an organic deterioration of some sort point to the fact that before psychogenic interpretations and psychotherapeutic methods appeared many patients manifested what were known as periods of remission — periods occurring early in the course of the disease during which all or nearly all of the abnormalities cleared away. These periods of remission varied in duration. Perhaps, it is argued, that these so-called cures are nothing more than periods of remission. Obviously much has yet to be done in the field of schizophrenic reactions.

Paresis. This disease presents the behavior effects of a degeneration of the cerebral cortex due to syphilitic infection. That it is syphilitic is no longer questioned, although some think that it may be a special strain of the spirochete which infects the nervous system. It is a disease which has been long studied and in consequence the literature of the subject is replete with refined classifications and differentiations. Most of these refinements will be ignored here as of minor importance for the purposes of this text, although they do often demonstrate how influential the past of an individual may be upon the course and form which symptom groups may take. The frequency of this disease varies according to the nature of the population which a given hospital serves. It is much more frequent where the population is dense. Figures, roughly expressed, range from two to fifteen per cent of hospital ad-

missions. Other names are frequently used, especially general paralysis, dementia paralytica, and general paresis.¹

The aspect of paresis of greatest interest to the psychologist is the progressive breakdown of the personality. As might be expected the finer or higher or newer organizations and syntheses are the first to go. Continued active attention early becomes difficult and later impossible. Normal courses of thought are broken. Associations are weakened and new associations are not readily formed. Memory fails. At first this is doubtless through defect of impression, but soon it is by disturbance of recognition as well. Later on there is a defect of retention due to the cortical degeneration. This appears to follow Ribot's law of regression. Victims who have been able business men often attract attention to their condition by their loss of good judgment. Fatigue comes more and more readily. Of the feelings and emotions it is the finer or higher which are first to be affected. There is indifference toward the niceties of dress and personal appearance, to the feelings of associates and relatives. Basic feelings remain longest and are poorly inhibited because of the degeneration of the higher inhibiting achievements. Fits of anger, grossly impulsive acts, take the place of what had been a well-ordered life. Moral character breaks and the individual may become lewd. The handwriting becomes coarse and tremulous, speech becomes thick and clumsy (Methodist Episcopal may be pronounced "Methist Pispal"), motor reactions of the eye become imperfect and tendon reflexes exaggerated. Another evidence of affective change is the failure to be concerned about these marked changes.

The course of the disease is a progressive exaggeration of the various features just described. Thinking becomes more and more dilapidated until even the simplest operations are impossible. Associations become absurd and follow the famil-

¹ Students must guard against confusing general paralysis with the paralysis following an apoplectic seizure.

MAJOR ABNORMALITIES

course of delusional development. There are delusions of jealousy and there are hypochondriacal ideas. Memory becomes more and more imperfect until eventually the patient may not even be able to recall his own name upon request. The disturbance of memory and association and attention of course badly disturbs perception until eventually the process practically ceases to function. Feelings and emotions become more and more limited to the primitive; and as the perceptive and thought life disappears the usual stimuli for emotions also vanish. Muscular co-ordinations are progressively obliterated. Speech becomes worse and eventually impossible, tremors become pronounced, tendon reflexes disappear and eventually the patient can no longer sit or stand. The so-called "paretic seizures" appear. Some of these resemble apoplexy and some are like epilepsy. Finally, the dementia becomes profound and the patient lies in bed a mere vegetative organism. Tube feeding becomes necessary in order to maintain life. Muscular contractions become conspicuous, legs and arms are drawn into odd positions, and often the head will be raised from the pillow by a contracture of the neck.

The following description presents a typical case of paresis in an early stage:

Male, 56 yrs. Laborer. Health poor, looks pale and sickly. Knee jerks slightly exaggerated. Pupils are rigid, no longer reacting to changes in degree of illumination. Speech is thick and clumsy. There is a facial tremor. Habits are filthy. Presence of syphilis clearly indicated by a highly positive Wassermann test. He is extremely exalted, says he is 79 years old, that his wife gave birth to four twins, that he has 565 relations of whom 75 are brothers and 375 sisters, that he has 500 uncles, 700 aunts, 300 grandfathers and 700 grandmothers. Promises to give the attendants in the hospital one hundred and fifty billion dollars each. Says he owns a vast amount of stock of all kinds and descriptions and that it recently increased many

millions of dollars in value. Says to-day is March 29th (really March 6th). Is oriented as to place but says he has been in the hospital one month, when actually admitted but a few days before.

To the above description of the course of parietic degeneration it is necessary to add that, even without medical care, there are often periods of what is known as a remission of symptoms. Even after the disease has become plainly manifest there may come a period in which the symptoms clear away almost entirely, and the patient may be able for a time to resume a normal, or nearly normal, routine of life. But without medical treatment a reappearance of the disturbance is certain and then the deterioration is progressive until terminated by death.

While this has been presented as an adult disturbance, it should be known also that there are instances of *juvenile paresis*. These are cases of congenital syphilis. As in adult cases there is a period of several years between infection and the appearance of the parietic symptoms so in congenital cases several years elapse before the degeneration becomes manifest. It may appear as early as five years, possibly earlier, but instances of juvenile paresis are more likely to appear in adolescence.

One of the most brilliant achievements of medical science in recent years is the discovery of methods for arresting the progress of this disease. Through the use of high temperatures produced either by physical means or by the artificial production of malaria or some other fever most gratifying results are obtained in a considerable percentage of cases. Many are now being returned to the occupations of normal life. This does not mean that there is a complete restoration of destroyed tissues. That could scarcely be expected. But it does mean that the course of degeneration is arrested, and that there is sufficient improvement in behavior to make possible the social rehabilitation of many who a few years ago would have been doomed to progressive degeneration and death. If these cases do carry through life some scars from the experience,

that is no more than happens to persons who are said to have recovered from many other diseases. As might be assumed, the most satisfactory results are obtained where the treatment is made possible very early in the course of the disease.¹

It needs to be better known also that behavior much like the familiar symptoms of paresis, at least in its early stages, can be produced by glandular dysfunction and also by extreme fatigue. While cases of this sort are probably not very frequent, nevertheless their existence should be kept in mind both for interpretative and for social purposes.

Senile Dementia. It will be found that textbooks on nervous and mental diseases present several forms of senile psychosis. These differ in age of onset and the discoverable organic accompaniments but for psychological purposes the differences are up to the present of minor importance. The mental phenomena are those of deterioration.

There is a decline of impressionability with a corresponding disturbance of memory for recent events. Attention is poor and there is a notable decline in the range of interest. The present situation becomes of less and less significance. There is a poverty of ideas. Judgment becomes, of course, impaired as a normal outcome of the changes already mentioned. Failure to recognize the fact of their increasing incompetence frequently makes them very difficult. Often, however, there is an awareness of physical deterioration and a consequent declining ambition. Adaptability is greatly reduced and the person becomes more and more self-centered. There is a tendency to self-isolation. Curious hoarding habits appear. There is distrustfulness manifested even to those who have been most intimate and loved. This is often accompanied by irritating habits of suspicious watchfulness and even of prying into

¹ Dubois, P. H., Mays, L. L. and Landis, C., "Changes in psychological functions in paresis, II." *Psychiat. Quart.*, 1934, 8, 699-702. Ferraro, A. and Fong, T. C. C., "The malaria treatment of general paresis," *J. Nerv. & Ment. Dis.*, 1927, 65, 225-229. Landis, C. and Rechetnick, J., "Changes in psychological functions in paresis, I." *Psychiat. Quart.*, 1934, 8, 693-698. Noyes, A. P., *Modern Clinical Psychiatry*, pp. 304-310.

the affairs of others. Their life is largely a matter of what has been, rather than of the present and the future. Delusions may develop, of persecutory or grandiose or melancholic nature. Hallucinations are reported, but these are less frequent. Sleep disturbances are interesting but not well-explained. There may be much sleepiness in the daytime and wakefulness at night. The family seeking to care for such a person may be troubled by much wandering about when everyone else desires to sleep.

Why some people in the last years of life should suffer such alterations of personality as these and so many others should not still awaits complete explanation. It seems quite certain that age is not the sole cause. There are marked changes in the cerebral cortex which can be readily demonstrated in post-mortem examination. But the cause of these changes remains to be explained. A severely exhausting life may contribute to its appearance. The use of alcohol probably does. Physical injuries may be a factor. And there is the still debatable question of the possibility of an intrinsic defect.¹

Other Deteriorating States. There are many other abnormal conditions of the neuropsychic organism which present similar patterns of deterioration. Some of them will be discussed in later chapters, but many of them cannot be included in this book. And for psychological purposes their inclusion is not at present necessary. They present much the same psychological features as those already described. The patterns may differ somewhat, but the general nature of the changes involved differ little. Medically, however, they are highly important because of differences in the cause and in the treatment required. Head injuries may result in dementia. Brain tumors, various toxic conditions, and arteriosclerosis produce patterns of mental deterioration. Huntington's chorea (sometimes known as St. Anthony's dance) presents an interesting but

¹ The changes and life problems of old people, not suffering dementia, have been brilliantly presented by Martin, L. J. and DeGruchy, C., *Salvaging Old Age*. New York, Macmillan, 1930. Pp. 173.

rather rare dementia accompanied by a marked disturbance of motor control. Epilepsy sometimes brings on a dementia. A presentation of this will be found in the chapter on epilepsy. Alcoholism also may produce a deterioration. This will be found described in connection with the other alcoholic effects included in the chapter on drug disturbances.

SELECTED REFERENCES

- Bleuler, Eugen, *The Theory of Schizophrenic Negativism*. New York, Nerv. & Ment. Dis. Pub., 1912. Pp. 36.
- Bleuler, Eugen, *Textbook of Psychiatry*. New York, Macmillan, 1924. Pp. 635.
- Devine, Henry, *Recent Advances in Psychiatry* (2nd. ed.). Phila., Blakiston, 1933. Pp. 364.
- Kirby, G. H., Davis, T. K. and Riley, H. A. (Eds.), *Schizophrenia (dementia praecox)*. An Investigation of the Most Recent Advances. Baltimore, Williams and Wilkins, 1931. Pp. 246.
- May, J. V., *Mental Diseases*. Boston, Badger, 1922. Pp. 544.
- Myerson, A., *Psychology of Mental Disorders*. New York, Macmillan, 1927. Pp. 135.
- Myerson, A., *The Inheritance of Mental Diseases*. Baltimore, Williams and Wilkins, 1925. Pp. 336.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Pp. 485.
- Pressey, S. L. and L. C., *Mental Abnormality and Deficiency*. New York, Macmillan, 1926. Pp. 356.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Pp. 697.
- Southard, E. E. and Jarrett, M. C., *The Kingdom of Evils*. New York, Macmillan, 1922. Pp. 708.
- Stoddart, W. H. B., *Mind and Its Disorders*. Phila., Blakiston, 1912. Pp. 518.
- Störring, G., *Mental Pathology in Its Relation to Normal Psychology*. London, Sonnenschein, 1907. Pp. 308.
- Strecker, E. A. and Ebaugh, F. G., *Practical Clinical Psychiatry* (3rd. ed.). Phila., Blakiston, 1931. Pp. 553.
- White, W. A., *Outlines of Psychiatry* (7th ed.). New York, Nerv. & Ment. Dis. Pub., 1919. Pp. 345.
- Wiersma, E. D., *Psychology of dementia*. J. Ment. Sci. 1930, 76, 1-42.

CHAPTER XI

MAJOR FORMS OF ABNORMALITY (*Continued*)

THE EPILEPSIES (SALIENT FEATURES OF SEIZURE, VARIANT FORMS, FREQUENCY AND EFFECTS OF SEIZURES, INTERPRETATIONS, HEREDITY PROBLEM, EXPERIMENTAL STUDIES).

Under the name of epilepsy there appears much that is of interest to the psychologist. The seizure or paroxysm or fit which characterizes this form of abnormality has been known since very ancient times, and probably among all peoples. When the story of human reactions to the presence of this disease is written it will constitute a fascinating chapter in abnormal psychology. Some have thought of it as a manifestation of demonic possession; others have looked upon the seizures as a manifestation of divine presence. Many different names have been given to it.¹

But its long history does not unfortunately mean a comparably large amount of knowledge concerning its nature. Epilepsy is still in large part a source of bewilderment. There is a welter of thinking concerning its nature. Of one thing, however, nearly all students of the subject appear to be convinced and that is that the term epilepsy as now used actually designates a large number of different patterns of abnormality. Either this group must be broken up into several groups, or it must be generously subdivided. But to make such a reclassification requires more knowledge than is at present available; consequently it is preferable for the time being to think of it

¹ A good beginning in this field of human reactions to epilepsy has been made by L. Kanner. See his paper: "The names of the falling sickness. An introduction to the study of the folklore and cultural history of epilepsy," *Human Biol.*, 1930, 2, 109-127.

as a group and whenever convenient to refer to it in the plural — to speak of the epilepsies rather than of epilepsy.

The outstanding feature of what is popularly known as epilepsy is of course the seizure or fit. It is this which has been known from ancient times. It has been observed in those of great achievement as well as in lesser minds. Many people distinguished otherwise in history are supposed to have been epileptics. Among them are Cambyses, Caligula, Napoleon, Julius Caesar, Mohammed, Handel, Swift, Dostoevsky and St. Paul. Dostoevsky capitalized his knowledge derived from personal experience in many of his writings. His characters, notably Myshkin in *The Idiot*, are sometimes admirable presentations from an inside knowledge of epileptic phenomena.

Salient Features of the Seizure. The seizure itself in the form known as *grand mal* is conspicuously abnormal. The attack appears suddenly with violent tonic contractions of the voluntary musculature. These if closely watched will be found to appear first on one side and in some one place as the arm or leg, from which the spasm spreads rapidly over the body. The patient loses consciousness with it and falls. The tonic contractions are of brief duration and are followed by clonic contractions as relaxation begins to take place. The duration of the seizure is brief, ranging from two or three minutes up to perhaps ten minutes. Consciousness returns gradually. Sometimes there is a second seizure before consciousness has been entirely restored; in fact, there are instances of many such repetitions. Upon regaining consciousness the sufferer is greatly exhausted and desires to rest for some hours at least.

The paroxysm is often preceded by a period of excitement and heightened emotionality of an exceptionally pleasant nature. Thoughts flow freely and to the great satisfaction of the thinker. All his powers seem to him to be at the maximum of functional capacity. It is a time of exaltation to the point of ecstasy. This experience has been especially described by

Dostoevsky and those who have written of him.¹ This leads to the aura and then the events of the seizure already described.

A common and conspicuous feature is the epileptic *aura*. This is an hallucination which occurs shortly before the seizure, and after a little experience is interpreted by the patient as a warning; frequently this enables the patient to get to some comfortable place before the attack. These auræ have often been described and are of many kinds. Some are simple sensory hallucinations, some are more complicated and some are so highly complicated as to be at once both baffling and tantalizing. Starr found in a study² of two thousand cases that auræ were present in 38 per cent. He found the following order of frequency of auræ: 1, epigastric sensations; 2, cephalic sensations of vertigo; 3, numbness in arms; 4, visual; 5, mental states with fear; 6, cardiac sensations; 7, auditory; 8, abdominal; 9, numbness in limbs, etc. The uncontrollable impulse to run forward a few steps constitutes the aura in one case. In another described by Gowers³ there was a warning constant for years which involved experiences described as auditory but apparently located in the chest and head, visual experiences of light and color and of a human figure, and some peculiar olfactory hallucinations.

After the paroxysm there is *amnesia* for the period of the attack (occasionally including a slight retroactive amnesia) and for some time a marked emotional peculiarity. The patient is cross, irritable, morose, extremely difficult to handle and socially most undesirable. Consciousness may for a time be partially clouded. The attentive field seems to be narrowed and there is a continued disturbance of the course of thought. Patients in this post-paroxysmal period will often fail to recog-

¹ Clark, L. P., "A psycho-historical study of the epileptic personality," *Psychoanal. Rev.*, 1922, 9, 367-401.

² Starr, M. A., "Is epilepsy a functional disease?" *J. Nerv. & Ment. Dis.*, 1904, 31, 145-156.

³ Gowers, W. R., "Subjective visual sensations," *Nature*, 1895, 52, 234-236.

as a group and whenever convenient to refer to it in the plural — to speak of the epilepsies rather than of epilepsy.

The outstanding feature of what is popularly known as epilepsy is of course the seizure or fit. It is this which has been known from ancient times. It has been observed in those of great achievement as well as in lesser minds. Many people distinguished otherwise in history are supposed to have been epileptics. Among them are Cambyses, Caligula, Napoleon, Julius Caesar, Mohammed, Handel, Swift, Dostoevsky and St. Paul. Dostoevsky capitalized his knowledge derived from personal experience in many of his writings. His characters, notably Myshkin in *The Idiot*, are sometimes admirable presentations from an inside knowledge of epileptic phenomena.

Salient Features of the Seizure. The seizure itself in the form known as *grand mal* is conspicuously abnormal. The attack appears suddenly with violent tonic contractions of the voluntary musculature. These if closely watched will be found to appear first on one side and in some one place as the arm or leg, from which the spasm spreads rapidly over the body. The patient loses consciousness with it and falls. The tonic contractions are of brief duration and are followed by clonic contractions as relaxation begins to take place. The duration of the seizure is brief, ranging from two or three minutes up to perhaps ten minutes. Consciousness returns gradually. Sometimes there is a second seizure before consciousness has been entirely restored; in fact, there are instances of many such repetitions. Upon regaining consciousness the sufferer is greatly exhausted and desires to rest for some hours at least.

The paroxysm is often preceded by a period of excitement and heightened emotionality of an exceptionally pleasant nature. Thoughts flow freely and to the great satisfaction of the thinker. All his powers seem to him to be at the maximum of functional capacity. It is a time of exaltation to the point of ecstasy. This experience has been especially described by

Dostoevsky and those who have written of him.¹ This leads to the aura and then the events of the seizure already described.

A common and conspicuous feature is the epileptic *aura*. This is an hallucination which occurs shortly before the seizure, and after a little experience is interpreted by the patient as a warning; frequently this enables the patient to get to some comfortable place before the attack. These auræ have often been described and are of many kinds. Some are simple sensory hallucinations, some are more complicated and some are so highly complicated as to be at once both baffling and tantalizing. Starr found in a study² of two thousand cases that auræ were present in 38 per cent. He found the following order of frequency of auræ: 1, epigastric sensations; 2, cephalic sensations of vertigo; 3, numbness in arms; 4, visual; 5, mental states with fear; 6, cardiac sensations; 7, auditory; 8, abdominal; 9, numbness in limbs, etc. The uncontrollable impulse to run forward a few steps constitutes the aura in one case. In another described by Gowers³ there was a warning constant for years which involved experiences described as auditory but apparently located in the chest and head, visual experiences of light and color and of a human figure, and some peculiar olfactory hallucinations.

After the paroxysm there is *amnesia* for the period of the attack (occasionally including a slight retroactive amnesia) and for some time a marked emotional peculiarity. The patient is cross, irritable, morose, extremely difficult to handle and socially most undesirable. Consciousness may for a time be partially clouded. The attentive field seems to be narrowed and there is a continued disturbance of the course of thought. Patients in this post-paroxysmal period will often fail to recog-

¹ Clark, L. P., "A psycho-historical study of the epileptic personality," *Psychoanal. Rev.*, 1922, 9, 367-401.

² Starr, M. A., "Is epilepsy a functional disease?" *J. Nerv. & Ment. Dis.*, 1904, 31, 145-156.

³ Gowers, W. R., "Subjective visual sensations," *Nature*, 1895, 52, 234-236.

nize their intimate acquaintances and may be inattentive to affairs of apparent importance to them. Ejaculatory remarks may be uttered which seem not to be connected with the present situation.

The preceding description of the seizure including the outstanding characteristics of the pre- and the post-paroxysmal periods is a sort of average arrived at from the reading of much clinical literature. To find a single case conforming in all details to this description would doubtless be very difficult, but some such picture is necessary as a basis for the recognition of the numerous deviations from this so-called average or typical course.

Variant Forms. The features of the pre-paroxysmal period may be exaggerated and those of the other periods minimized in some cases so that an ecstasy may be the outstanding feature of the attack. Perhaps that is all that the observer will notice unless he is well trained. Again there may be little of the pre-paroxysmal and the post-paroxysmal may be reduced to a brief period of exhaustion with amnesia for the paroxysm itself. The clinical picture would then consist primarily of the symptoms of the seizure; but even in such cases there may be marked differences in the degree of their intensity and duration. Many patients experience seizures so slight that they seem to be little more than momentary losses of consciousness; the motor features are reduced to such a degree as to be either absent or not noticed. Such cases have come to be called *petit mal* in contrast with the grand mal described above. In older literature there may be found a sharp differentiation assumed or expressed between the petit mal and the grand mal seizures, but there now seems to be a general recognition that the one is but a mild form and the other an aggravated form of the same abnormal process. Treatment will often reduce grand mal seizures into petit mal, and neglected cases may grow from petit mal into grand mal.

In another form of this disease both the paroxysm itself and

the pre-paroxysmal phases are relatively insignificant, the outstanding features then being the prolonged duration and the intensification of the symptoms of the post-paroxysmal period. These present peculiarly troublesome social problems, although psychologically they may be the most interesting of all forms. Here the amnesia is extended to include the post-paroxysmal period. The patient goes about his affairs in an abstracted manner and is likely to be dangerously morose, irritable and malevolent. Sometimes epileptics in this condition wander off long distances and give rise to sensational newspaper stories of multiple personalities, lost minds, and the like. Serious criminal offenses, even including homicide,¹ may be committed while the patient is in this condition, for all of which he will have no recollection when his normal state eventually returns. It is a condition in which the most highly complex acts are done in an almost automatic fashion. Unfortunately such people are often allowed complete freedom because their diseased condition is not recognized, or the seriousness of it is not known. In other instances the activity is so obviously abnormal and dangerous as to be immediately recognized. Good examples of this are to be found in the behavior commonly called "running amuck," in which the patient dashes wildly through a street or crowd shooting or stabbing frantically whoever or whatever may come in his way.

Certain variations of epileptic phenomena are known as "epileptic equivalents." Typical seizures may not in a given case appear at all or they may appear at long intervals, and yet the patient suffers attacks of depression and persistent ill-humor which have a decidedly epileptoid appearance. Napoleon's periods of frightful ill temper and moroseness are often referred to as examples. The occurrence of such just before or during some of his famous battles is used by biographers as an explanation of their indecisiveness or even of his defeats.

¹ For an instructive description of such a case see Grant, A. R. and Allan, S. M., "Post-epileptic automatism as a defense in a case of murder," *J. Ment. Sci.*, 1929, 75, 707-713.

Sometimes the "equivalent" takes the form of a period of confusion or excitement in which the patient rushes about, talks garrulously if not incoherently, is for the most part unresponsive to the environment and may yet occasionally be found to be suggestible. Ecstatic states occur also in comparative isolation from the rest of the epileptic seizure phenomena. With so many variations possible, or alleged to be, it is not at all surprising that there should be much confusion with some forms of the manic-depressive group and also with some forms of dementia præcox. Perhaps this is due to an imperfect knowledge of the disease and perhaps, too, epilepsy occurs along with other forms of mental disease. Certainly the latter seems to be true in some of the cases presented.

Frequency and Effects of Seizures. The frequency of epileptic attacks varies greatly and is also dependent upon the medical care the patient is receiving. Cases are reported varying all the way from several seizures in a day to three or four in a period of twenty-five years. Proper medical care greatly reduces their frequency and in some more favorable cases they may be stopped altogether.

Intellectual impairment is usually the consequence of recurrent epileptic seizures. This may continue more or less rapidly into profound dementia. On the other hand it is true that many experience a very slow dementia, so slow that the impairment is of minor consideration from a social point of view. That many people have succeeded in achieving greatness in spite of epilepsy (perhaps in some cases because of it) is frequently told as a means of encouragement for those afflicted. Medical care, which reduces the severity and the frequency of the seizures, delays the impairment of mind and is thus to be sought as early as possible. The dementia consequent to epilepsy presents familiar characteristics. There is inattention, poverty of associations, erratic judgment, wandering digressions, disturbances of perception and memory, and loss of orientation.

It is difficult to obtain the desired conception of epilepsy

from the presentation of a single case. A disease which presents so many forms or degrees of variation is difficult of comprehension without the observation of many cases or the reading of much clinical literature. The following clinical report of a case may serve fairly well, however, as an introduction:

Female, 19 yrs. Health poor. Unmarried. Family history negative. Said to have had some kind of a spasm at six months and another at five years. Growth seems to have been somewhat retarded and there is a defective development of one hand and arm. Since the spasm reported at the age of five there have been epileptic seizures more or less frequently ever since. At fourteen she suffered a severe attack of scarlet fever. Her seizures are of the more severe or grand mal variety. Just prior to each seizure she says that she sees bright colors, green, black and red; these appear to be a little off to the right — she says she sees them more with the right eye. The frequency of the seizures and her poor health interfered with schooling so that she has probably never done more than the work of the first three grades. Considerable impairment of intelligence is evident, and her memory is poor. Headaches are frequent. At home she became so cranky and unmanageable as to make commitment imperative. In the hospital she manifests much the same characteristics, is noisy, restless and destructive. The pupils are somewhat dilated but react to light.

Interpretations. Although these epileptic disturbances have been recognized and treated in various ways for so long a time comparatively little progress was made in its interpretation until within the last ten or fifteen years. And even today its interpretation is a matter of much debate, although the experimentation and systematic studies as well as the discussion have served to throw much light upon it. That animals as well as human beings are subject to convulsions of possibly epileptic-like nature has been frequently noted. Cats, dogs, oxen, pigs,

poultry, rabbits and canaries have such convulsive attacks. So it is not surprising that much of the effort has been centered upon the seizure itself, the attempt being to explain the seizure, assuming it to be the essential feature of the disease. It has been pointed out that certain abnormal conditions of the body, especially of the brain, cause or contribute to the onset of such seizures. Brain tumors, gunshot wounds in the head, and similar lesions have been pointed to as causes. But the nature of the process in the seizure itself is not thus explained.

An English physician, Hughlings Jackson, whose name is notably identified with many studies of this subject, proposed the theory that the seizure was due to a sudden, excessive and rapid local discharge in the cortical gray matter. This sudden discharge it was long thought would account for the loss of consciousness as well as the violent muscular activity. (It should be recalled here that the reverse of this theory has been used for the explanation of hallucination.) Progress in both psychological and physiological investigation has led to two general groups of interpretation either of which supersedes this older, although recognizedly ingenious, theory of Hughlings Jackson.¹

One type of investigator has concentrated upon the seizure itself, with all the background afforded by modern knowledge of anatomy, physiology and biochemistry. Much has been learned concerning the chemical condition of the blood at or about the time of the seizure. Convulsions have been artificially produced in animals. It has been pointed out that the epileptic paroxysm is like decerebrate rigidity, and that circulatory disturbances have been observed in the brain during a seizure. Imperfect oxidation of acids has been discovered. So this has all led to theories couched in terms of nerve physiology and biochemistry which can be roughly consolidated and

¹ The important papers of Hughlings Jackson have recently been made more accessible through re-publication: Taylor, J., Holmes, G. and Walshe, F. M. R. (Eds.), Vol. 1, *On Epilepsy and Epileptiform Convulsions*; Vol. 2, *Evolution and Dissolution of the Nervous System; Speech; Various Papers*. London, Hodder, 1931-32.

summarized about as follows: there is some native imperfection in the interaction of physiological processes; an approximate stability of function would continue but for a further disturbance coming through a brain injury or from poisons due to further disturbance of biochemical processes; these cause a change in the cerebral circulation or a cerebral poisoning or both, cortical functioning is weakened, resulting in unconsciousness and a reduction in the amount of cortical control of the lower cerebro-spinal levels with the consequent exaggerated functioning of the lower, much as in decerebrate animals. The clonic contractions are in this conception attributable to the return of control by the cerebral cortex. Hints are offered that psychological contributing causes may function also through the well-known changes in internal processes accompanying emotion as presented by Cannon and Crile.¹

There are also those who point seriously to the endocrines. Justification for this is not wanting. Epileptic disturbance is known to be aggravated by changes in endocrine pattern. Studies of the age of onset reveal that there is a high frequency in the first four years of life when growth changes are known to be so rapid. There is another period of high frequency of onset during the years of pubescence, and the period of the climateric is known to aggravate epileptic cases.² If this is pointing in the direction of a purely organic interpretation or to emotional effects incidental to a history of maladaptation remains to be ascertained. Perhaps both may be involved.

¹ The literature here is voluminous but a good introduction may be had through the following: Osnato, M. A., "Critical review of the theories of the pathogenesis of epilepsy, with a new interpretation of available data," *J. Nerv. & Ment. Dis.*, 1923, 57, 267-270. Pollock, L. J., "Experimental convulsions," *Arch. Neur. & Psychiat.*, 1923, 9, 604-612. Rosett, J., "The mechanism and fundamental cause of the epilepsies," *Arch. Neur. & Psychiat.*, 1923, 9, 689-738. Rosett, J., "Epilepsy as an exaggerated form of normal cerebral inhibition," *Amer. J. Psychiat.*, 1931, 10, 673-685. Sargent, Percy, "Some observations on epilepsy," *Brain*, 1921, 44, 312.

² Gordon, A., "Convulsive disorders of two opposite periods of life: puberty and climacterium," *Amer. J. Psychiat.*, 1933, 12, 929-938. Partridge, J. C., "Epilepsy and the endocrines," *Amer. J. Psychiat.*, 1928, 8, 137-139.

Another group of investigators insist that the epileptic seizure is but an incident in or the climax of a long series of events, that the disturbance is to be explained in terms of a psychogenic theory. For these thinkers the all-important problem is the epileptic personality and not the seizure per se. This epileptic personality or the groundwork for it has existed in the individual from birth and continues to exist even though the patient be cured or relieved of the seizures. The outstanding features of this personality are: (1) egocentricity, (2) supersensitiveness, (3) emotional poverty (conceived as limited range of emotionality).

An individual predisposed to such traits has of course a hard time in the world. As a child he is unresponsive to discipline in the home and later, in the school, is rebellious. His feelings are easily hurt, he cannot get on well with other children, anger is easily and often aroused; he is ambitious but too often for ends which are impossible. Such a life of continued unhappiness, self-centeredness, thwarted desires and consequent concentration upon a limited range of emotional experience becomes increasingly intolerable. Escape from it is sought. Mere fits of anger and fighting do not achieve the desired. Escape can be found in a relapse into unconsciousness, and with this relaxation of higher level control there is a return to the impulsive motor activity of infancy which constitutes the familiar features of the epileptic seizure. Thus the fit is construed as the climax of maladjustment and the findings of the biochemist are secondary to it. In support of this interpretation cases are presented showing marked improvement when the whole round of life's activities are guided to the end of helping the patient to a more satisfactory adjustment to life. Such interpretations are admittedly the outgrowth of psychoanalytic studies. Automatic ejaculations made by the patient just before, during or immediately following the paroxysm are utilized for such analyses exactly as the dream content and hysterical automatisms

are utilized as the basis for psychoanalysis in other forms of mental disturbance.¹

The efforts of psychopathologists to trace the causes of epileptic reactions to a basic peculiarity of personality is naturally arresting to the psychologist. He recalls at once the efforts to explain the schizophrenic in terms of a schizothymic personality, and to interpret the manic-depressive psychosis in relation to a cyclothymic personality, and he also recalls the uncertainty at present over these alleged types. Is there an epileptic personality, with all the characteristics mentioned above?² Or is the epileptic personality the consequence of the efforts to live in a social order that is hard on those who suffer recurrent seizures of this kind? The answer is not yet in sight.

The known relations between organic conditions and human reactions coupled with the present trend of the organic interpretations of epilepsy in terms of basically defective biochemical functions would argue strongly for the possibility of an intrinsically determined type of personality. On the other hand the early onset of the seizures in most cases of epilepsy would make possible the production of the epileptoid personality through the struggle to live with a difficult handicap. The child and the adolescent who suffers recurrent seizures is often unwanted socially, is looked upon as queer if not insane, is possibly feared by some, and, with all wisdom, is often not trusted as other children. As youth progresses and the social obligations of life come to the fore still other obstacles arise. Love and marriage for the epileptic present awkward situations. To obtain a job of any sort may be especially difficult because few

¹ The best introduction to the literature from this point of view may be found through the following papers by Clark, L. Pierce, "A psychological interpretation of essential epilepsy," *Brain*, 1920, 43, 38-49; "The psychobiologic concept of essential epilepsy," *J. Nerv. & Ment. Dis.*, 1923, 57, 433-444.

² See the presentation of these types in chapter I, and also Rosanoff, A. J., "A theory of personality based mainly on psychiatric experience," *Psychol. Bull.*, 1920, 17, 281-299.

wish to employ an epileptic. Perhaps the bad temper, the self-centeredness, and the rest are but the products of these social conflicts. And then one would also like to know to what extent these difficulties in turn aggravate the epileptic condition.¹

Heredity Problem. All these social and psychogenic aspects of epileptic disturbances are still further complicated by the problem of transmissibility. If there is an intrinsic defect in an epileptic, is there any reason to suppose that it may be transmitted to his children? Are the brothers and sisters of an epileptic likely to be subject to the same trouble? Worry over such problems and the belief in certain answers to them are the causes of no little maladjustment and may be causes of psychoneurotic conditions.

Studies of this subject are so far quite unsatisfactory and inconclusive. And they must of necessity continue to be, so long as the term epilepsy is admitted to cover a great variety of forms of disturbance. It is possible that some instances of bad temper are epileptic equivalents; but to say that the finding of a bad temper case in one generation and an epileptic seizure in the next is evidence for transmissibility would be rash indeed. Even the finding of an epileptic seizure in one generation and a somewhat similar seizure in the next cannot be safely used as evidence. Perhaps one of the seizures was traumatic in origin and the other endocrinal or even psychogenic. Until a better classification and more accurate definitions are possible all studies of the inheritance of epileptic states must be accepted with reservation.

Presentations can be found that indicate the appearance of what is called epilepsy in a succession of generations. Text-books of nervous and mental diseases usually state that a defective heredity is a causal factor. But it is also true that brothers and sisters of epileptics seldom become epileptic. It

¹ Doolittle, G. J., "The epileptic personality — its progressive changes among institutional cases," *Psychiat. Quart.*, 1932, 6, 89-96. Notkin, J., "Is there an epileptic personality make-up?" *Arch. Neur. & Psychiat.*, 1928, 20, 799-803.

has been pointed out that siblings are frequently found in institutions for the feeble-minded, but far less often are siblings found in institutions for epileptics. Studies of the children of known epileptics are in startling disagreement, but the better ones do not indicate a percentage of epilepsies in the offspring which would justify explanation in terms of transmission. It is obviously quite possible that there are forms of epilepsy that come from a defect in the germ plasma, and that there are other forms which are entirely adventitious. But unfortunately we are not yet able to distinguish between them.¹

Experimental Studies. Systematic experimental studies on epileptic cases are still very few in number. Such as we have apparently indicate that the reaction times of epileptics are on the average longer than are those of normal subjects. Studies of perseveration appear in harmony with the reaction time findings for they indicate a greater degree of perseveration in epileptics than in normals.² For the present, however, these results must be taken with caution. It would be illuminating also to know if nearness or remoteness to the time of a seizure has any effect upon these scores.

¹ The best of this literature on inheritance has been ably summarized in the chapter on Epilepsy in Myerson's *The Inheritance of Mental Disease*.

² See the following for an introduction: Ewen, J. H., "Perseveration in the insane epileptic," *J. Ment. Sci.*, 1930, 76, 537-540; Robb, J. R. B., "A study of incoordinate movement in epilepsy," *J. Ment. Sci.*, 1930, 76, 512-523.

SELECTED REFERENCES

- Clark, L. P., "A psycho-historical study of the epileptic personality," *Psychoanal. Rev.*, 1922, 9, 367-401.
- Lennox, W. G. and Cobb, S., *Epilepsy*. Baltimore, Williams and Wilkins, 1928. Pp. 197.
- Lord, J. R., "Epilepsy: a clinico-pathological study of fifty cases," *J. Ment. Sci.*, 1925, 71, 240-253.
- Malzberg, B., "The prevalence of epilepsy in the United States, with special reference to children and adolescents," *Psychiat. Quart.*, 1932, 6, 97-106.

- Myerson, A., *The Inheritance of Mental Disease*. Baltimore, Williams and Wilkins, 1925. Chap. V.
- Notkin, J., "A contribution to the subject of epilepsy, with special reference to the literature," *J. Nerv. & Ment. Dis.*, 1928, 67, 321-345, 457-477, 567-598.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. XIII.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Part II, chap. II.
- Shanahan, W. T., "Convulsions in infancy and their relationship, if any to a subsequent epilepsy." *Psychiat. Quart.*, 1928, 2, 27-41.
- Taylor, J., Holmes, G. and Walshe, F. M. R. (Eds.), (Collected papers of Hughlings Jackson). London, Hodder, 1931-32. 2 vols.

CHAPTER XII

MAJOR FORMS OF ABNORMALITY (*Continued*)

MANIC-DEPRESSIVE PSYCHOSES (MANIC PHASE, DEPRESSED PHASE, MIXED FORMS, CASES, PSYCHOLOGICAL SIMILARITIES, INTERPRETATIONS, EXPERIMENTAL STUDIES), THYROID DISTURBANCES, PSYCHASTHENIC DEPRESSIONS, INVOLUTIONAL MELANCHOLIA, HYGIENIC ASPECTS.

These present an instructive contrast to dementia præcox and to paresis because there is here as a rule no dementia, but there is a marked emotional disturbance. Such disturbances of thought as do appear are temporary and correspond to the nature of the emotional disturbance whether one be the cause of the other or not. Perhaps both are the consequence of a more obscure cause. About fifteen per cent of hospital admissions are of this class. As the name implies the group includes two markedly different reactions, the maniacal and the depressed. The casual observer might think that these should be treated separately. Formerly they were so treated, but in recent years it has become clear that they are most intimately related. While there are many patients who manifest only one or the other phase, there are many others who alternate between the two. In common practice degrees of each phase are roughly distinguished by special terms. Degrees of mania are described as hypomania, acute mania, and hyperacute mania; degrees of depression are described as simple retardation, acute melancholia, and stuporous melancholia.

Manic Phase. In hypomania, the mildest manic phase, facial expressions are gay, happy, animated; the clothing is loud, noticeable, very likely eccentric in some way. The conversation is animated even to the point of vehemence, and it is replete with eccentricities of expression. All reactions are quick.

The writing is likely to be large and indicative of impatience and haste. The judgment is erratic and the ideas bizarre. Such patients often think that they have made great discoveries, which they will write about furiously and at length. The more they write the greater the discovery seems to them. They are excessively enthusiastic and often distressingly willing to assist everybody with everything. A thoughtful consideration of others is not, in fact, characteristic of the hypomanic. They sleep little and are up at all hours; are hasty, noisy, and changeable in their activities; and are peculiarly impatient with anything which threatens delay. While they are usually agreeable, some are more than commonly irritable and a few display very bad temper. With such traits it is not surprising to learn that they are often erotic, even though they were conservatively moral when in good health.

Acute mania is but an exaggeration or aggravation of the symptoms just presented. The ideas flow faster and faster, motor activity likewise, until coherence practically disappears. It becomes difficult to catch the attention of the patient so dominated is he by the wild rush of ideas and yet at the most unaccountable times the patient may suddenly respond to the sight of the physician, nurse or some inanimate object as the starting point for equally rapid thought in other lines. Occasionally delusions enter in, but like all else they are changeable and lack elaborateness of development. The emotional life continues to be that of exaltation although anger is easily aroused. Such patients talk wildly, rush about if permitted to do so and may damage themselves or others or objects which happen to be in their way. Hyperacute mania is the extreme and is of a delirious nature. The flight of ideas becomes even more incoherent, the activity constant, and hallucinations noticeable. Exhaustion results and if care is not exercised other complications set in.

It should be observed that the maniacal patient is manifesting that which is other and more complicated than would be

the case if it were a mere speeding up of normal processes. He is not merely running in high gear and stepping on the gas; he is running away and his steering gear at least is out of order. The chronic good feeling gives a heightened and favorable evaluation to all that comes to mind; if any notion lingers in attention at all it is accordingly raised to an exaggerated degree of value. It becomes a grand and glorious idea, a world-saving discovery. This points also to an actual limitation of the normal range of association. While ideas may race through attention, the lack of hesitation, criticism, and deliberation points to a marked limitation of associative range. The associations which would in better days have brought about a truer evaluation for some reason cannot, or at least do not, come to consciousness or if they come to consciousness are marginal and never enter the focal point. There is something in all this which is strikingly remindful of the person described in chapter nine as fatigued nearly to the point of exhaustion and yet refusing to think and insisting upon working away at a frantically abnormal pace.¹

Depressed Phase. This phase will be found in all degrees from a simple depression to complete stupor. But all degrees or stages have characteristics in common, the more severe being but exaggerations or aggravations of the symptoms of the less severe forms. The physical manifestations of dejection are most noticeable. The patient may sit for hours, incapable of any effort, with shoulders bowed, head forward, tears slowly dropping from the eyes, and rubbing or wringing the hands in the well-known gesture of distress. Conversation with such, not always possible although usually so, reveals that they are oriented and rarely hallucinated, and that they are troubled by most lugubrious notions. One thinks that she has committed the unpardonable sin and that she is doomed to eternal torment, another that she has been the unintentional cause of the death

¹ There is a masterful description of maniacal behavior to be found in Charles Mercier's *Text-book of Insanity*. London, Sonnenschein, 1902. Pp. 238.

of members of her family and that her present depression is the consequence, another has merely hypochondriacal ideas and is sure that he will never get well. Responses to questions may be very slow in coming and slow in articulation, indicative of the retardation. Usually such answers are brief, often in monosyllables. Thinking is apparently as slow as the responses; and consciousness is suffused with melancholy. The stuporous condition seems to be but the extreme form of these symptoms. Here our knowledge is of course dependent upon what can be obtained from the patient after the stuporous state has passed, for while in it a patient is quite unresponsive.

Mixed Forms. Antithetic as mania and depression appear to be, they nevertheless are closely associated and probably closely akin in their essential nature. They not infrequently occur in one and the same patient, sometimes alternating with each other in a regularity of rhythm so striking as to lead to the name "circular insanity." Some patients have merely recurrent attacks of mania alternating with periods of relative normality, others have similarly recurrent attacks of depression, others have alternately recurrent attacks of mania and depression sometimes, although not necessarily, separated by periods of normality. A patient who may be clinically presented one week as an excellent case of maniacal excitement may the next week be equally presentable as a typical case of melancholia. Frequently maniacal patients have periods of mild depression and likewise melancholiacs not infrequently have occasional periods of hypomania. For these and other reasons contemporary psychiatrists, following Kraepelin, now generally assume that they are all variants of one disease entity.¹

Cases. The two following cases are very fair samples of those to be found in the files of most hospitals. It will be ob-

¹ For other useful descriptions of these states and for case descriptions see the following: Jelliffe, S. E., "Cyclothymia—the mild forms of manic-depressive psychoses and the manic-depressive constitution," *Amer. J. Insanity*, 1911, 67, 661-676. Saunders, E. B., "A study of depressions in late life with special reference to content," *Amer. J. Psychiat.*, 1932, 11, 925-954.

served that the second case shows the alternation between depression and mania.

Female, 20 yrs. High school graduate with a brilliant school record. Wanted a university education, but circumstances of life seemed to make it necessary for her to give up her ambition, which she did and went to work. Relatives report that she worked hard and, according to their story, she broke down because of overwork. She became excited and uncontrollable. In the hospital she was at first noisy and restless, she talked almost continuously and rather incoherently, her voice was hoarse from excessive use, she slept little, the facial expression was that of great excitement, she gave little care to her person and little heed to her surroundings. A sample of her talking follows: "Oh, gosh, yes, I suffer. I sat on Hoover's doorstep and bawled. Della Fox is the most notorious woman in the world. I know so blamed much slush. I have to suffer so much I am a regular Pollyanna. I know I can go to that club. This fool tried to kill Caruso. You know I was doing police reporting," and so on indefinitely. Under hospital care she gradually quieted down and became quite coherent. There seemed to be every prospect for such an improvement as to make dismissal possible, but before this was achieved there was a relapse and another outbreak of excitement similar to that described above. Such was her condition when this record was made.

Female, 59 yrs. Father a drunkard, mother died of tuberculosis, has a cousin reported to be "queer." Started to work in a factory at eight years of age and worked steadily up to fifteen years ago. Married at twenty-two but never had any children. Has been admitted to this hospital nine times in six years. The first time she was admitted she was in a state of excitement, laughing and talking wildly, sleeping little. This subsided in a few weeks, she became quiet, poised and rational, was dismissed. Since then the attacks have been with but one

analytic school of thought. They suggest that the maniacal activity is a sort of attempt to escape from some inner craving or memory, which, if submitted to, would be highly disagreeable. Thus the wild rush of activity in mania is in the form of self-protection, a desperate attempt to become so absorbed in anything and everything except the patient's inner and true self that the inner and the true will be swamped, that the disagreeable will be avoided. For this the somewhat fantastic name of "flight into reality" has been devised. Melancholia, according to this theory, is the evidence of failure to succeed in such a "flight" or even to achieve it at all in some instances, with the consequent overwhelming by remorse. According to this theory the actual thoughts reported by these cases, maniacal or melancholiac, are of secondary importance. The real determiners of the disturbance are unconscious. In support of this position they point to the incidental appearance of manic-depressive symptoms in other forms of mental disease where disturbances of thinking are conspicuous and where dementia is in progress, paresis and dementia præcox.¹

There has also been much interest in recent years in the possibility of finding at least a partial explanation of the manic-depressive psychoses in terms of *personality types*. Kretschmer's contributions on this have been especially welcomed.² The pyknic type of body with the associated cyclothymic type of personality has been presented as the basis upon which manic-depressive patterns are developed. The extroverted habits, the tendencies to talkativeness, and the freedom of emotional reaction in the cyclothymic (pyknic) give evidence of weaker cerebral dominance, and, where such control is normally weak, it should be all the easier to break it up into the emotional dominance of the manic-depressive. Careful studies

¹ Boltz, O. H., "Trend situations in manic-depressive psychoses and their interpretation," *Psychiat. Quart.*, 1934, 8, 111-120. Diethelm, O., "The nosological position of panic reactions," *Amer. J. Psychiat.*, 1934, 13, 1295-1316.

² See presentation and references in chapter I.

have been made of large groups of manic-depressive cases to discover if they are predominantly composed of those with the pyknic habitus; and it is true that large proportions of such are reported. Of 85 manic-depressive cases examined by Kretschmer, 72 are reported as being predominantly pyknic; and of 175 schizophrenes but 5 had a predominantly pyknic habitus.¹ But one must read all such studies critically, and observe that there are in all of them instances of manic-depressive psychosis developing in persons with the long-thin type of body (the leptosome or athletic-asthenic). The correlation between body type and form of psychosis is yet little more than a very promising field for further research. And it is further certain that all manic-depressive psychoses are not preceded by a cyclothymic temperament.²

Experimental Studies. For a number of reasons systematic experimental studies of this form of abnormality are still in an exploratory stage. One might at first think that the exalted phase and the retarded-depressed phase would, if properly studied, reveal differences in reaction time. But if the trouble is emotional rather than one of speed of nerve conduction, so simple a process might not be affected. Such evidence as we have points rather toward a disturbance of control, toward an irregularity of response, than toward any characteristic change in the time of a simple reaction. Snoddy's test of stability in one motor functional pattern indicated increasing disturbance of this stability as a period of manic-depressive disturbance was approached. Testing by means of the fluctuation of an ambiguous figure on a small number of cases has given indication of a significant difference between manic-depressive cases and those suffering the schizophrenic reaction. In the studies of extraversion and introversion, the assumption has often been made that maniacal excitement manifested the extreme of extraversion. With the test which Neyman and Kolstedt used

¹ Kretschmer, E., *Physique and Character*, p. 35.

² Landis, C. and Katz, S. E., "The validity of certain questions which purport to measure neurotic tendencies," *J. Appl. Psychol.*, 1934, 18, 343-356.

which the observer knows would help greatly to relieve the situation.

One feature of this form of depression which is strikingly different from that of the typical manic-depressive psychosis is the rapidity with which it will clear away when a proper adjustment is achieved. When the affairs of the psychasthenically depressed person are straightened out, so that life appears less ominous and burdensome, the tension disappears, sleep is improved, and the depression rapidly fades away. The same is conspicuously true of nostalgia. When the homesick person goes home for a visit, or circumstances are provided which produce a more homelike situation, the depression vanishes with surprising facility. The depressions of the typical manic-depressive psychosis do not behave in this way. They run a characteristic course little affected by changes of environment or efforts to improve the social situation.¹

Involucional Melancholia. The relationship of this to the manic-depressive psychoses is also questioned by some. Perhaps it should receive a special classification, though that may be left for others to determine; but its psychological features certainly justify its consideration in this connection. The clinical picture is that of the now familiar depressed condition; often, however, it is the picture of an agitated depression. The patient is troubled, heavily troubled, by many things; but it is a troubled state that involves considerable movement, fussing about as though futilely trying to do something about it and at the same time with a consciousness of the futility of all the efforts.

As the name implies, this disturbance is definitely associated with the involucional period of life. In women it comes ordinarily in the late forties, the period of the menopause sometimes called the climacteric or the "change of life." In men there is a change which corresponds physiologically, coming

¹ For a full presentation of the psychology of nostalgia see the author's *Principles of Adolescent Psychology*, p. 209.

about ten years later on the average, but which for psychological as well as physiological reasons is ordinarily far less likely to be disturbing. Cases of involuntional melancholia are thus far more frequently found among women.

While this condition is definitely associated with an important shift in the endocrine pattern, it is now generally admitted to involve large psychogenic influences. There is often a history of failure or of unsatisfactory achievement. Awareness of the physiological changes in progress means to the woman that the possibility of reproduction is rapidly passing, that old age and the end of life are imminent. The unpleasant prospect for the future coupled with the unsatisfactory past brings hopelessness, regret, a keener consciousness of failure, and thoughts of death. Friends and relatives dying aggravate all this. The person becomes increasingly irritable, peevish, and easily brought to tears. There is worry, fatigue, feelings of helplessness, perhaps even a consciousness of guilt. Sometimes there are some schizophrenic features, delusions and occasionally hallucinations.

The course is rather different from that of the depressed phase of manic-depressive states. As the endocrine changes become complete and the body adjusted to the changes, and as the person going through the experience becomes better adjusted to the facts of life, of old age and its accompaniments, as new interests are acquired and better understandings arrived at, the melancholia clears away. It may require two or three years, but unless there are some organic complications it should clear up. There is, however, in this disturbance as in all depressed states the danger that the sufferer may put an end to his troubles by suicide. A thoughtful protective supervision is thus for a time necessary.

The small number of people who develop involuntional disturbances in comparison with the vast number of those who pass through the involuntional period with scarcely a ripple of trouble has been the cause of no little comment.

Perhaps there is some inherent defect which makes the period more difficult for the few than it is for the many. Perhaps the reason is to be found in the peculiar experience in life, the psychogenesis, of those who suffer involutional melancholia. Perhaps there are other reasons. The problem is not yet solved.¹

Hygienic Aspects. It should be pointed out that all forms of the manic-depressive psychoses are often referred to as benign psychoses because of the high percentage of so-called cures. It is true that there is this tendency toward recovery from individual attacks, especially if cared for properly, and it is also true that there is no dementia as a consequence, but there is also a marked tendency to recurrence of attacks. For this reason the best of mental hygiene for those who have had such an attack is now constantly urged. Probably good hygiene could in many instances postpone and perhaps occasionally prevent the recurrence. It is unfortunately true, however, that perfect hygienic conditions for mental cases and the business of living are incompatible even where the principles of hygiene are known.

But it must also be kept in mind that vast numbers of people pass through the struggles and tragedies of life in childhood and adolescence and maturity without suffering any breakdown into the emotional disturbances of manic-depressive psychosis. Perhaps there is some intrinsic weakness or predisposition; and if there is the best of hygiene and preventive efforts may fail utterly to prevent the recurrence of the trouble. Hygienists should not then be either too optimistic or too easily discouraged. With our present knowledge, whatever is or is not done, we are likely to have a continuation of the stream of manic-depressive cases.²

¹ Farrar, C. B. and Franks, R. M., "Menopause and psychosis," *Amer. J. Psychiat.*, 1931, 10, 1031-1044. Riddoch, G., "Mental manifestations of the climacteric," *Brit. Med. Jour.*, 1930, 2, 987-990.

² Steen, R. R., "Prognosis in manic-depressive psychoses," *Psychiat. Quart.*, 1933, 7, 419-429.

SELECTED REFERENCES

- Beers, C. W. A., *A Mind That Found Itself*. New York, Doubleday, 1935. Pp. 434. (First published in 1908.)
- Bowman, K. M. and Raymond, A. F., "A statistical study of hallucinations in the manic-depressive psychosis," *Amer. J. Psychiat.*, 1931, 11, 299-309.
- Devine, Henry, *Recent Advances in Psychiatry* (2nd ed.). Phila., Blakiston, 1933. Pp. 364.
- Hillyer, Jane, *Reluctantly Told*. New York, Macmillan, 1926. Pp. 205.
- Hinsie, L. E. and Katz, S. E., "Treatment of manic-depressive psychosis," *Amer. J. Psychiat.*, 1931, 11, 131-183. (Includes twenty-five pages of bibliography.)
- Jelliffe, S. E., "Some historical phases of the manic-depressive synthesis," *J. Nerv. & Ment. Dis.*, 1931, 73, 353-374.
- Lewis, A. J., "Melancholia: a historical review," *J. Ment. Sci.*, 1934, 80, 1-42.
- Lundholm, H., *The Manic-depressive Psychosis*. Duke Univ. Psychol. Monog. 1931, No. 1. Pp. 86.
- MacCurdy, J. T., *The Psychology of Emotion, Morbid and Normal*. New York, Harcourt, 1925. Pp. 589.
- May, J. V., *Mental Diseases*. Boston, Badger, 1922. Pp. 544.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chaps. IX, X.
- Oliver, J. R., *Fear: the Autobiography of James Edwards*. New York, Macmillan, 1927. Pp. 366.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Part II, chap. IV.
- Strecker, E. A. and Ebaugh, F. G., *Practical Clinical Psychiatry* (3rd ed.). Phila., Blakiston, 1931. Pp. 553.
- Wertham, F. I., "A group of benign chronic psychoses: prolonged manic excitements. With a statistical study of age, duration and frequency in 2000 male attacks," *Amer. J. Psychiat.*, 1929, 9, 17-78.
- White, W. A., Davis, T. K. and Frantz, A. M. (Eds.), *Manic-depressive Psychosis*. Baltimore, Williams and Wilkins, 1931. Pp. 851.
- White, W. A., *Outlines of Psychiatry* (7th ed.). New York, Nerv. & Ment. Dis. Pub., 1919. Chap. IX.

CHAPTER XIII

THE ABNORMALLY ENDOWED

MEANING OF AMENTIA, DEFINITION OF FEEBLEMINDEDNESS, CLASSIFICATION BY INTELLIGENCE, IDIOCY, IMBECILITY, MORONITY, GROWTH RELATIONSHIPS, EXPERIMENTAL STUDIES, CAUSES OF FEEBLEMINDEDNESS, DISTINCTIVE FORMS OF FEEBLEMINDEDNESS, MORAL IMBECILITY, SOCIAL ASPECTS, CONSTITUTIONAL PSYCHOPATHIC INFERIORITY, INTERPRETATIONS OF CONSTITUTIONAL PSYCHOPATHIC INFERIORITY, GENIUS (DEGENERACY THEORY, PROPHETIC THEORY, SPECIAL TRAIT ENDOWMENT, PSYCHOGENIC THEORY).

It has long been customary to think of the feeble-minded and of the genius as representing the extremes of native mental endowment. The feeble-minded were the unfortunate, the weak, the foolish; while geniuses were those so exceptionally endowed by nature as to be the towering expressions of the best human nature had achieved. In contemporary educational literature there is much discussion of the exceptional pupil. This concept, exceptional pupil, now includes both extremes and the argument is that pupils of inferior intelligence should be given special assistance proportionate to their need and that those of superior endowment should be given opportunities proportionate to their ability. But in both popular and professional thought there not infrequently appears evidence of an assumption that the problems involved are more simple than they really are. There is a tendency to think of the feeble-minded as characterized merely by a low intelligence and the geniuses as merely those who enjoy an exceptionally high intelligence. While these intelligence differences are doubtless the more obvious differences, they do not provide a complete explana-

tion of the characteristics of the feeble-minded nor of the traits of the genius. The problem is much more complicated as will be discovered in the following paragraphs.

Meaning of Amentia. It is often said that the feeble-minded differ from other abnormals in their inherent lack of some characteristics essential to normality of mind. The insane are by this distinction assumed to have once been normal and then as the consequence of some disturbance developed the abnormal symptoms; while the feeble-minded are assumed to have been defective in some respect from birth. This has led to the use of the term amentia in contrast to dementia. The dement suffers the dilapidation of a mind that was once healthy and complete; the ament never had a complete mind.¹ For this distinction there is considerable evidence. Studies of the brains of the feeble-minded reveal certain gross differences, some have huge ventricles and little brain tissue, often the brains indicate fewer convolutions, and when microscopically examined the cortex appears to be defective. Unfortunately there have been far too few microscopic studies, but such as are available indicate quite clearly that there are in feeble-minded brains a larger number of undeveloped nerve cells and frequently a smaller number of pyramidal cells. The more extreme instances of these brain defects are usually accompanied by certain more or less conspicuous defects in the gross anatomy of the body. There are peculiarities in the shape of the nose, the ears, the palate, and even of the larger bones of the body.

Definition of Feeble-mindedness. The definition of feeble-mindedness is still no small problem. Southard,² with penetrating insight, referred to the "feeble-mindednesses." He

¹ The term amentia is also sometimes used, especially in the literature of certain European countries, to designate an organic psychosis characterized by confusion, disturbance of perception, bewilderment, and helplessness. Exhausted states are probably the best example of this.

² Southard, E. E., "An attempt at an orderly grouping of the feeble-mindednesses (hypophrenias) for clinical diagnosis," *J. of Psycho-asthenics*, 1919, 24, 99-113.

CHAPTER XIII

THE ABNORMALLY ENDOWED

MEANING OF AMENTIA, DEFINITION OF FEEBLEMINDEDNESS, CLASSIFICATION BY INTELLIGENCE, IDIOCY, IMBECILITY, MORONITY, GROWTH RELATIONSHIPS, EXPERIMENTAL STUDIES, CAUSES OF FEEBLEMINDEDNESS, DISTINCTIVE FORMS OF FEEBLEMINDEDNESS, MORAL IMBECILITY, SOCIAL ASPECTS, CONSTITUTIONAL PSYCHOPATHIC INFERIORITY, INTERPRETATIONS OF CONSTITUTIONAL PSYCHOPATHIC INFERIORITY, GENIUS (DEGENERACY THEORY, PROPHETIC THEORY, SPECIAL TRAIT ENDOWMENT, PSYCHOGENIC THEORY).

It has long been customary to think of the feeble-minded and of the genius as representing the extremes of native mental endowment. The feeble-minded were the unfortunate, the weak, the foolish; while geniuses were those so exceptionally endowed by nature as to be the towering expressions of the best human nature had achieved. In contemporary educational literature there is much discussion of the exceptional pupil. This concept, exceptional pupil, now includes both extremes and the argument is that pupils of inferior intelligence should be given special assistance proportionate to their need and that those of superior endowment should be given opportunities proportionate to their ability. But in both popular and professional thought there not infrequently appears evidence of an assumption that the problems involved are more simple than they really are. There is a tendency to think of the feeble-minded as characterized merely by a low intelligence and the geniuses as merely those who enjoy an exceptionally high intelligence. While these intelligence differences are doubtless the more obvious differences, they do not provide a complete explana-

tion of the characteristics of the feeble-minded nor of the traits of the genius. The problem is much more complicated as will be discovered in the following paragraphs.

Meaning of Amentia. It is often said that the feeble-minded differ from other abnormals in their inherent lack of some characteristics essential to normality of mind. The insane are by this distinction assumed to have once been normal and then as the consequence of some disturbance developed the abnormal symptoms; while the feeble-minded are assumed to have been defective in some respect from birth. This has led to the use of the term *amentia* in contrast to *dementia*. The dement suffers the dilapidation of a mind that was once healthy and complete; the ament never had a complete mind.¹ For this distinction there is considerable evidence. Studies of the brains of the feeble-minded reveal certain gross differences, some have huge ventricles and little brain tissue, often the brains indicate fewer convolutions, and when microscopically examined the cortex appears to be defective. Unfortunately there have been far too few microscopic studies, but such as are available indicate quite clearly that there are in feeble-minded brains a larger number of undeveloped nerve cells and frequently a smaller number of pyramidal cells. The more extreme instances of these brain defects are usually accompanied by certain more or less conspicuous defects in the gross anatomy of the body. There are peculiarities in the shape of the nose, the ears, the palate, and even of the larger bones of the body.

Definition of Feeble-mindedness. The definition of feeble-mindedness is still no small problem. Southard,² with penetrating insight, referred to the "feeble-mindednesses." He

¹ The term *amentia* is also sometimes used, especially in the literature of certain European countries, to designate an organic psychosis characterized by confusion, disturbance of perception, bewilderment, and helplessness. Exhausted states are probably the best example of this.

² Southard, E. E., "An attempt at an orderly grouping of the feeble-mindednesses (hypophrenias) for clinical diagnosis," *J. of Psycho-asthenics*, 1919, 24, 99-113.

considered that it was just as necessary to think of feeble-mindedness as a group of many clinical types as it is to think not of epilepsies but of the epilepsies.

The intellectual incapacity of this group naturally attracted the attention of the psychologist bent upon the measurement of intelligence. Many studies have been made by mental testers of the intelligence of the feeble-minded and also of comparisons with the intelligence of normal children. Of course they reveal the feeble-minded to be more or less behind normal children in their ability to solve the problems presented in the intelligence tests. As a consequence of this comparison with the intelligence of normal children psychologists have come to define feeble-mindedness as some defect which prevents the individual from ever achieving an intelligence higher than that of a twelve-year-old normal child.

The social significance of this intelligence defect is so conspicuous as to have led to definitions in terms of it. Feeble-minded have been defined¹ as those who because of some defect from birth or an early age were unable to live in society as it is today without assistance and supervision. A British Royal Commission, investigating the matter, emphasized the inability of the feeble-minded to compete on equal terms with normally minded people and their inability to manage their affairs with normal prudence.

An attempt has also been made to differentiate the feeble-minded in terms of how much they can learn, how much language they can acquire and the peculiarities of that which they do acquire. Some of them never get beyond baby ways of expression. Others manage to read and write although with little fluency. Then the number of grades which they can achieve in school has been another educational or pedagogical criterion. Students of anatomical development and of the influences of defects in the functioning of the ductless glands have made yet other emphases and of course in terms of their particular fields of research.

¹ Tredgold, A. F., *Mental Deficiency*. Phila., Wood., 1922.

Classification by Intelligence. Prior to the use of intelligence tests it was customary to describe the differences between different grades of feeble-mindedness in terms of ability to take care of one's self in case of fire or impending accident, of ability to do certain mechanical tasks under supervision, of capacity for improvement by training, of the need of supervision, of the inability to be independently self-sustaining. But such criteria are very like the criteria used for the differentiation of normal abilities before the development of intelligence tests. They are unsystematic. So the development of intelligence tests and the determination thereby of norms for each age of development supplied a most valuable tool to those who were studying the feeble-minded. The extensive use of these tests on the feeble-minded has made clear that feeble-mindedness is not to be thought of as a distinctive group or a type isolated from that of the normal individual and the normal curve of the distribution of intelligence. Rather it has been found that there are gradations all the way through from the lowest grade of feeble-mindedness up to that which is fully normal.

It is now customary to think of the intelligence distribution of humanity as being approximately that of the normal probability curve. At one end are the geniuses of which there are few, of the people of exceptionally high ability there are many more, of people of average ability there are by far the most, of people of modest ability there are a large number but not as many as those of middle or average ability, and of the lower grades of ability there are still smaller numbers. As most students of psychology know, individual positions in this distribution are commonly expressed in terms of the Intelligence Quotient. This is the ratio of the mental age, that obtained in a given case by means of mental tests standardized by age, to the actual chronological age. When this has been multiplied by one hundred to eliminate the decimal it provides a very convenient figure for purposes of comparison. Thus the Intelligence Quotient of the ex-

actly average child would be 100. The highest quotient ever obtained is somewhat over 200 and the lowest is nearly zero.

Theoretically it ought to be possible to determine where in this distribution is the line of demarcation between the feeble-minded and the normal minded. By going to a few institutions and obtaining the I.Q. (convenient abbreviation for intelligence quotient) for each inmate one ought not only to obtain the distribution for the feeble-minded but also to discover the point of demarcation between them and the normal. Such attempts at once reveal, however, the long-standing problem of the borderline cases. There is no such sharp division; but there is a regular gradation through, as has been assumed in the previous paragraph on the distribution of intelligence. Hence it has been necessary to make an approximation from the study of a large number of cases and then to agree upon some point in the distribution as the line of division.

This is now generally agreed upon as being I.Q. 70. Below this rating the individual is said to be feeble-minded; above it all are classed as normal. While this is admittedly an arbitrary distinction, students should remember that it is in large part a distinction which has behind it the long experience of society in the practical determination of the capable from the feeble-minded.

Lines of demarcation for other grades of ability and disability have also been agreed upon, even including the higher degrees of endowment. They are now usually presented in a table about as follows:

Genius	I.Q. Above	140
Very superior		120-140
Superior		110-120
Normal or average		90-110
Dullness		80-90
Borderline deficiency		70-80
Feeble-mindedness	Below	70
Moron		50-70
Imbecile		20-50
Idiot	Below	20

Idiocy. As has been indicated by the table above, idiocy is any degree of intelligence below that expressed as I.Q. 20. Expressed in terms of mental age an idiot is one whose intelligence never develops above that of a three-year-old child. The details of the physical defects accompanying idiocy are of little psychological significance, primarily because the persons so afflicted are too feeble in mind to be aware of or affected by them. (They are well described and pictured in most of the standard texts on mental deficiency.)

Motor control is inadequate. The gait in walking, if they are able to walk at all, is clumsy, uncertain and tottering. There is often paralysis more or less extensive, consequently many such are either bedridden or are at best able to do no more than sit up in a chair. Epileptic seizures not infrequently occur in idiots. Speech is very limited. Some learn to articulate a few words and to associate them with the appropriate objects. Grunts, yells and screeches, usually of a disagreeable quality, are often heard. Sensory defects are so common as to be usual, although the defect is likely to be more of one sense than of all.

Perception is imperfect both because of the sensory defect and because of cerebral deficiency. Memory is poor and apparently there is little imagination. With deficiency so general, reasoning could not be expected. The instinct-emotional life is crude and uninhibited. The appetite is voracious. Animal-like, they gulp down everything with little mastication. Anger and fear are evident, but self-protective power is at a minimum. There is nothing which could be termed intelligent play. And they are very destructive. Some show signs of affection. With most it is difficult if not impossible to teach the fundamental habits of physical cleanliness. Thus they present a picture of magnified infancy. They are as ignorant, as thoughtless, as untaught, as uninhibited, as animal-like, as a child of two years of age. Chronologically they live longer than that, but mentally they

never mature and are almost as monstrous as if an individual should grow to mature physical stature and retain the anatomical proportions of infancy.

Imbecility. This is the next stage or grade above idiocy. Some have attempted to distinguish an intermediate grade termed idio-imbecility, but little more can be learned psychologically by such additional classifications. The picture here is that of a degree of mentality midway between that of the idiot and of the normal mind. Looked upon as such it becomes instructive. Again sensory perception is generally dulled, but as the cerebral condition is better than that of the idiot so sensation and perception are better. The imbecile can learn a few things of a simple nature, especially of a manual nature. But anything which requires sustained or continued attention of the voluntary type is impossible. The attention is rather easily attracted by what others are doing and may be so held for a time, but that which requires individual initiative is lacking. Memory, as might thus be expected, appears somewhat better than in idiocy but is still quite limited in range. Some of the abler imbeciles can be sent on simple errands with a fair degree of certainty that they will be accomplished. They are however easily fatigued and confused by anything calling for attention and mental effort. While they acquire some language it is limited to spoken language and that to simple sentences. The vocabulary is very limited and the pronunciation often defective. The attention defect combined with the language limitations make reading impossible, although imbeciles often appear to enjoy looking at pictures.

Some are much more active than others, in fact there is a tendency to distinguish between the apathetic and the excited forms. The amount of movement of imbeciles thus varies through a wide range, from a very limited amount to perpetual running about, chattering, and being a general nuisance. They are highly suggestible, yet at the same time

stubborn in opposing what some one else may desire of them. There is little if any development of shame or modesty; consequently their behavior is often disgusting. The occasional appearance of vanity and of jealousy gives hints of something more in their organization than merely primitive emotions. The physical appearance is notably that of a defective.

Anatomical abnormalities, stigmata as they are called, are noticeable. The abnormal motor control also attracts attention. There are peculiarities or eccentricities of walking, the facial expression is stolid or vacuous or it may be that of a simple childish smile, giving place at times to an expression of sly cunning. The mental appearance of the imbecile is obviously that of a child, not an infant but a child. It is again as though the body had grown up and the mind remained in a decidedly pre-school stage of development. So it is customary to describe the mentality of the imbecile as that of a normal child between the ages of three and seven years.

Morosity. This is the highest class or grade of feeble-mindedness. It is well for the student to observe that in the United States especially the term feeble-mindedness is used generically to designate the whole group of the intellectually deficient, and that the highest grade of these is commonly termed the moron grade. English writers use the term feeble-mindedness more specifically and mean by it the same as that indicated in American writings by morosity.¹

Most readers have probably had the opportunity of observing this grade of defect because so many of them manage to live fairly well in society through the kindness of relatives or friends who watch over them. As adults they manage to compensate somewhat for their defects. They recognize their deficiency, their emotional reaction to which is important for

¹ The most recently adopted scheme of classification in England places all mental deficiencies in a group called Oligophrenia.

observation, and they conform as well as they can to the accepted ways of life, permitting their relatives to supply the necessary intelligence.

Those degrees of defect which approach the borderline of what is called normality are sometimes not recognized as suffering anything more than a little dullness until the loss of a place of employment to which they have become habituated reveals their inability to compete with normal minds. They live by habit not by judgment, and when the acquired set of habits is inadequate they are helpless.

Sensory defects are not prominent but in the growing years the senses seem to be used less. There is not that variety and extensiveness of sensory experience of the normal child which gives the material for perception. Hence the background for perception and interpretation is limited. Voluntary attention is poor. Continued application to any task is therefore difficult if not impossible. With attention so easily distracted memory of course is reported as poor. It is also poor in the range of associations acquired. People who learn with such difficulty must of necessity acquire little.

Constructive imagination, inventiveness, originality, cannot be expected. They manifest the basic emotions and also some of the higher, but in the higher or derived forms of emotion and feeling their limitations again become evident. The finer esthetic and moral feelings are not for them. They are sometimes religious, but it is obviously in a childish manner. They are amused by the baldly ridiculous but lack appreciation for the subtle in humor. Some are well behaved and in their dull simple fashion are good children, good citizens, often beloved for their kindly ways. Others are difficult to control, because of their own lack of control. They are impulsive and give unrestrained expression to sudden desires. In the development of motor control there are difficulties. Some are always slow and heavy in response while others are quick and excessive in re-

action. But all find difficulty in learning the simple actions of co-ordination, such as are found in kindergarten programs, for example. Through life the evidences of this may continue. There may be noticeable peculiarities of movement and of facial expression. In speech there is often a defective articulation which may be due to peculiarities of motor control or it may be due to an imperfectly shaped palate. Altogether they present the appearance of being a little behind or below the general run of people. Some are so obviously defective as to be looked upon as silly and their ways condoned. As they supply the interval between imbecility and dull normals, or the borderline class, they are often described as corresponding in intelligence to the normal child between seven and eleven or twelve years of age.

Growth Relationships. Retardations of development are found in all forms of feeble-mindedness. Where growth records are kept and examined they will be found to show that the feeble-minded are late and slow in learning to walk, to talk, that dentition was late, etc. It must not be supposed that the idiot grows normally up to the idiot level of intelligence and then stops intellectual development, that the imbecile grows up to his level normally and then stops, and the moron likewise; rather is it that the idiot is the slowest of all in development and never rises above the idiot level, that the imbecile is slow in development but does develop more rapidly than the idiot although slower than the moron, that the moron in turn develops more normally than the imbecile but not with the speed of the normal child. The defectiveness seems to influence the whole course of mental development so far as the course of that mental development is observable. There are certain exceptions to this. If, for example, the mental defect is caused by a severe fever then the development may be assumed to have been normal up to the time of the illness. But where the defect is inherent or determined early in prenatal development then

the differentiations between the different grades of intelligence hold so far as known from birth up.¹

The notion is growing in favor that idiocy does not always represent merely the lower extreme of the normal distribution of intelligence. Some of them doubtless are instances of the lower extreme but many of them may be accidental and pathological. Occupational relations throw some light on this. It is known that the fathers of the feeble-minded are to be found largely in the social classes known as lower skilled and unskilled labor. That means that the feeble-minded come from fathers of the lower ranges of mental ability. But this is not so true of idiocy. The occupations of the fathers of idiots represent the general occupational distribution.²

Experimental Studies. While most psychological studies of the feeble-minded have been of a quantitative nature,³ on the measurement of intelligence, memory, perception, and sensation, there has been no failure to recognize that qualitative differences exist as well and that differences in character traits, differences in personality, are of importance for study. A little work has been done and more projected. On the qualitative differences between the feeble-minded and the normal minded the Ordahls⁴ have obtained some important conclusions. The attention aspects of consciousness are notably different. Where the normal mind has at least two levels of clearness the feeble-minded has one. As might be anticipated there are differences here according to the degree of enfeeblement. The higher

¹ For an instructive study of growth changes in the feeble-minded see Smith, C. W., "Growth in height of feeble-minded children," *J. Genet. Psychol.*, 1929, 36, 330-341.

² Paterson, D. G. and Rundquist, E. A., "The occupational background of feeble-mindedness," *Amer. J. Psychol.*, 1933, 45, 118-124. Lewis, E. O., "Types of mental deficiency and their social significance," *J. Ment. Sci.*, 1933, 79, 298-305.

³ For an excellent summary of these see May, J. V., *Mental Diseases*, Boston, Badger, 1922. Chap. XVIII.

⁴ Ordahl, L. E. and G., "Qualitative differences between levels of intelligence in feeble-minded children," *J. Psycho-asthen.*, Monog. Supp., 1915, 1, No. 2. Pp. 50.

grades have some differentiation of consciousness into levels of clearness, the lower grades do not. The lower grades, at least, of feeble-mindedness lack a sharp differentiation between the focal point and the margin of consciousness. For them all conscious contents are of uniform clearness or vagueness. This explains much of their failure to comprehend meanings, to observe and to evaluate. What the world would be without the differentiations of attentive clearness as experienced by the normal mind is rather difficult for the normal mind to guess, but certainly it would lose much of its definition.

The duration and the span of attention for the feeble-minded is below that of the normal. This also throws light on the failures to observe, to learn and to recall and upon the high suggestibility determined by others. They are also found to be lacking in the capacity for voluntary effort, which is akin to the defects of attention.

Studies of motor activity and of motor skill in the feeble-minded indicate about what one would expect. Psychomotor activity presents some positive correlation with degree of intelligence. Among the average and the inferior groups of the mentally deficient more psychomotor activity is found than among those of the higher degrees of ability. In mechanical skill there does not seem to be the great compensatory development so often heard in popular comment. Actually the subnormal mentally make poorer scores on tests of mechanical ability than do normal children, and this presents a fair degree of positive correlation with mental age.¹

Ordahl observed that character traits in the feeble-minded are pronounced, although he concluded that they are not as well unified into a personality as in the normal. Many have commented on the marked differences in personality among the feeble-minded. If personality is used as the most inclusive of psychological terms, as is now customary, it designates all that

¹ Page, M. L., "The mechanical ability of subnormal boys," *J. Appl. Psychol.*, 1933, 17, 164-181. Selling, L. S., "Psychomotor activity and feeble-mindedness," *Psychol. Clinic*, 1931, 19, 275-284.

the individual is by endowment and acquisition and the organization of it into a synthesized whole. So, there may be as many differences of personality organization or pattern as there are among normals.¹ These differences have been recognized, but little systematic work has been done on them. Socially these differences are of importance. Just because a given individual is mentally feeble does not necessarily mean that he will be vicious and irresponsible. Some more desirable traits might dominate. The study of personality and of character traits in normal psychology is admittedly in its infancy, but it has already made clear that the experiences of childhood and the earlier attempts at social adjustment condition the later development. Obviously the feeble-minded have a different and, if anything, more difficult problem in social adjustment. The very existence of the intellectual inferiority, especially if it is recognized by the subject of the defect, makes for a very serious complication of the factors in personality development. When these complications are unraveled as much more light will be thrown upon the psychology of the feeble-minded as has ever been shed by intelligence test studies. In the meantime it is of first importance to recognize that personality differences exist and to include them in all practical considerations of feeble-mindedness problems.

At least one systematic effort has been made to express these personality differences of the feeble-minded in terms of psychoanalytic psychology. L. Pierce Clark, in a thought-provoking volume,² has described these differences in terms of libido fixation at one or another stage of development. He finds the traits thus conceivable as autoerotic, narcissistic, and parental fixations. He also argued that, while the basic intelligence of the feeble-minded could not be improved, the break-up of these fix-

¹ A very carefully planned attempt to relate feeble-mindedness in some way to Kretschmer's physical types failed. See Strauss, E. B., "The psychological constitution of the weak-minded," *J. Ment. Sci.*, 1931, 76, 780-802.

² Clark, L. Pierce, *The Nature and Treatment of Amentia*. London, Bailliere, Tindall and Cox, 1933. Pp. 306.

tions and the forcing of further development in the course of socialization or social adjustment produced a personality pattern less troublesome and better able to contribute to self-support. Whether or not one be inclined to accept these psychoanalytic concepts, there may be much truth in the notion that the personality differences of the feeble-minded are due to delayed and distorted development which might in no small part be subject to re-education.

Causes of Feeble-mindedness. Thinking of psychopathologists and students of genetics has been changing rapidly on this subject. There was a time when feeble-mindedness was widely accepted as due primarily to inherited defect or to some toxic effect, such as alcoholism or syphilis, in the parents. Today there is far less confidence in any of these as significant factors. Many different causes are possible, perhaps sometimes working together. Several of these must be considered in detail.

Alcoholism is found in the parentage of aments with a frequency running up as high as forty-six per cent. But it must also be observed that the definition of alcoholism is a very uncertain matter, and that a more or less excessive use of alcohol is frequently found among those who suffer any form of nervous or mental disturbance which weakens control. So it may be that the use of alcohol is but an accompaniment not a cause. It is also emphasized that we lack figures on the frequency of alcoholism in the parentage of normal offspring. That excessive use of alcohol by a pregnant mother may have a deleterious effect upon the developing embryo is admitted and it may be that the excessive use of alcohol has a direct effect upon the germ plasma, but the evidence for it is not such as to warrant a conclusion. *Syphilis* has also been looked upon as a frequent cause of feeble-mindedness, but here again the more careful studies do not support the older supposition. Dayton,¹ after a study of many thousands of cases both normal and de-

¹ Dayton, N. A., "Syphilis in the etiology of mental deficiency," *Ment. Hyg.*, 1925, 9, 760-771. (Bibliog. of 51 titles.)

fective, came to the conclusion that syphilis was a negligible factor in the causation of feeble-mindedness. In a small number of cases it may be the cause through an early infection of the embryo subsequently resulting in syphilitic brain lesions, which arrest development. Syphilis may also occasionally have a direct effect upon the germ plasm. But the frequency of syphilis as the sole cause of amentia is quite small.

Brain injuries apparently account for a small proportion of the feeble-mindednesses. Some of them are birth injuries; others are accidents subsequent to birth; and some are attributable to accidents during fetal development. A very small number of cases have a history of instrumental delivery in which there is reason to think that some permanent damage was done by the instruments. But it is also true that a vast number of perfectly normal children are delivered with the aid of instruments, hence the mere fact that the process of birth was mechanically assisted is no reason for prophesying subsequent mental defect in any given case. The nature of the injury, however produced, is a lesion of the brain tissue itself. This may affect the subsequent development of mental ability and that alone. It may affect motor control without having any serious accompanying defect of mental ability. And there may be damage to both mentality and to motor functions. In institutions for the feeble-minded probably not more than ten per cent of cases are classifiable as birth lesion cases.

The psychology of these cases is just beginning to develop. The disturbances of motor control are of two general kinds. There is the spastic type of disturbance, in which opposing muscles or muscle groups are simultaneously and intensively contracted thus presenting awkward stiffenings or twistings of trunk and limbs; and there is the disorder of motor functioning known as athetosis, in which voluntary movements are fairly well achieved but there is superimposed upon them a somewhat rhythmic spread of muscle contractions which is highly disturbing. Sometimes both of these are present. Where such

cases retain a degree of intelligence above that of the feeble-minded group, the psychology must be that of the person who seeks social adjustment in the face of a serious physical handicap. There is the possibility of conflicts and complexes and maladjustment with their accompanying distortions of attitude and emotional reactions. But of the particular pattern of abnormality produced by this form of physical handicap practically nothing is yet known.¹

Accidents in infancy and childhood do sometimes injure the brain so as to prevent subsequent normal development and even bring on some features of dementia. But not all cases attributed by relatives to a bad fall are actually due to the accident. If there is any indication of epilepsy in the history, it is quite possible, even more likely, that the fall was really the first epileptic seizure and that the mental abnormality which followed is the dementing effect of the epilepsy rather than of the injury from the fall. It will be recalled that epilepsy frequently makes its first appearance in childhood.

Acute infectious diseases, such as scarlet fever, diphtheria, measles, encephalitis, and whooping cough, do at times cause such a poisoning of the brain, or in some instances hemorrhage, as to prevent the further normal development. The percentage of such cases is, however, quite small.

There is now ample reason for believing that *abnormality of the endocrine pattern* is a considerable and possibly a large factor in the production of the feeble-mindednesses. Raeder² reported that seventy-four out of one hundred cases of feeble-mindedness upon which autopsies were performed showed some kind of glandular change. It is well established that one form

¹ Dayton, N. A., "Abnormal labor as an etiological factor in mental deficiency and other associated conditions: analysis of 20,473 cases," *Proc. & Addr., Amer. Asso. Stud. Feeblemind.*, 1930, 35, 148-202. Doll, E. A., "Birth lesion as a category of mental deficiency," *Amer. J. Orthopsychiat.*, 1933, 3, 1-13. Doll, E. A., Phelps, W. M. and Melsher, R. T., *Mental Deficiency Due to Birth Injuries*. New York, Macmillan, 1932. Pp. 289.

² Raeder, O. J., "Endocrinology in the feeble-minded in one hundred autopsied cases," *J. Psycho-asthen.*, 1920, 25, 45-57.

of feeble-mindedness, cretinism (see below), is due to thyroid deficiency and there is a growing belief that another form of feeble-mindedness, mongolism (see below), is due to an excess of the thyroid hormone during fetal development. Perhaps disturbances of function in other glands contribute their share.

The older textbooks of psychiatry usually stated that *heredity* was the cause in a majority of the cases of feeble-mindedness. Statistical frequencies were given indicating a defective inheritance in percentages ranging up as high as eighty. But this meant only that the family histories revealed such a frequency of some form of abnormality. This might be amentia or some form of psychosis or of psychoneurosis. The assumption was that these items in the family history indicated a defect in the germ plasm which was the cause of the feeble-mindedness in the present generation. There was a tendency also to think of intelligence as a unit character, transmissible as a Mendelian unit. Extensive studies through many generations were made of families in which there were many instances discoverable of what was thought to be some form of feeble-mindedness.¹

In recent years there has been a notable shift away from this type of thinking. Intelligence may be a combination of many different functions, and as such it should not be thought of as a unit character transmissible in Mendelian fashion. The diagnosis of the higher grades of feeble-mindedness is not easy. Casual observation and local reputation are relatively unreliable guides. Many persons have been thought to be feeble-minded who upon careful testing have proved to be well above the line of normality. Others have been thought to be normal and tests have revealed the defect. Thus the determination of the frequency and degree of feeble-mindedness in ancestors who are dead and inaccessible to the tester is an unreliable effort if not quite impossible. Family history studies are thus to be

¹ Dugdale, R. L., *The Jukes*. New York, Putnam, 1910. Pp. 120. Estabrook, A. H., *The Jukes in 1915*. Washington, Carnegie Inst., 1916. Pp. 85. Goddard, H. H., *The Kallikak Family*. New York, Macmillan, 1913. Pp. 121.

read with great caution. And there are certainly many kinds of feeble-mindedness. The simple statement then that most feeble-mindedness is attributable to a defective germ plasm is today untenable.

After excluding the possibility of all other causes (infectious diseases, poisons, injuries, endocrine disturbances, etc.) there still remains a considerable group and of these some present a family history of what appears to be feeble-mindedness. Even the most caustic critics of the earlier work admit that there are probably forms of feeble-mindedness which are properly attributable to a germ plasm defect and that this continues to produce feeble-mindedness generation after generation. But the proportion of such is now thought to be far less than formerly.¹

Consanguinity as a cause of feeble-mindedness will remain uncertain until the hereditary factors in its production are finally determined. Just because a man and a woman are cousins is not in itself sufficient reason for expecting that their offspring will be mentally defective, although this notion has long been current in popular tradition. But if hereditary factors are in any fashion a causal agent of feeble-mindedness, as they probably are, then the problem of the marriage of cousins depends upon whether or not both parties come from thoroughly normal germ plasms. If the family history indicates defect then by the marriage of cousins the chances of that defect making itself apparent in their offspring is doubled, because the defect may be latent in both; whereas the marriage of a member of that family with a person from another and healthy family would reduce the likelihood of the defect appearing in the offspring.

Distinctive Forms of Feeble-mindedness. Of the feeble-mindednesses a few distinctive patterns have been isolated.

¹ In a survey of 3553 cases of retarded public school children, Dayton found only 7% where there was amentia in one or both parents, 3% in whose parents there was mental disease, and 1% with epilepsy in the parents. See Dayton, Neil A., "Survey of retarded children in public schools of Massachusetts," *Amer. J. Psychiat.*, 1927-28, 7, 809-835.

That these are largely based upon peculiarities of anatomy is not surprising in the undeveloped state of the psychology of feeble-minded personalities. They do, however, indicate a step in a desirable direction. The current thinking about them is abstracted in the following descriptions.

Cretinism, as was said above, is known to be due to thyroid deficiency. The mental characteristics are those of idiocy or low grade imbecility as a rule, although in milder cases the degree of mental enfeeblement may be less. As might be expected, its geographical occurrence is closely allied to that of goiter, although goiter may exist without cretinism. The thyroid deficiency becomes evident to the careful observer soon after birth in the slowness of development. Apparently the disturbance dates from birth or even considerably before. It may be of post-natal origin, but rarely later than the seventh year. The physical characteristics are peculiar. The individual is dwarfed, often greatly so, the head is large, the legs are short and bowed, the hands and feet stumpy and badly formed, the hair is coarse and the skin sallow. Puberty is much delayed. That the condition is due to thyroid deficiency has been demonstrated again and again by the remarkable improvement achieved by treatment with thyroid extract. But this treatment is of little avail unless begun early. After the physiological processes have become permanently adjusted to the defective endocrine condition, readjustment is apparently difficult.

Allied to cretinism is *mongolism*. This has often been called mongolian idiocy, but, as it is not limited to the lowest grade of mental deficiency, it is better termed simply mongolism. As one may infer from either of these names, the physical pattern of these cases presents an often striking resemblance to the head and face of the mongolian race. The head is notably round and the eyes appear to slant upward and outward.

Much attention has been given to this form of deficiency in

recent years. Extensively detailed descriptions of its physical and mental traits are available.¹ The sensory apparatus is ordinarily normal; but the use of it is defective. Perceptions are poor and attention notably undeveloped. With such deficiencies memory is of course poor. One notable feature is their imitateness. This, accompanied by an activity and alertness in the older cases, frequently misleads observers into thinking that there is more ability than actually exists. Muscular control is also conspicuously defective. Walking is awkward and there is difficulty with most co-ordinated activity. The muscles appear to be slack, or poor in tonus. The mouth is often open, the lower jaw hanging down either because of this weakness of the muscles or because of structural defects. Temperamentally they are placid, docile, and good-natured.

The causation of this form of deficiency is also vague. The family history is generally good; and the brothers and sisters of mongols are ordinarily normal. It has been thought that mongols were due to old age in the parents, especially in the mother; but this is now seriously questioned because mongols are known to have been born to mothers under thirty-five years of age. It is now fairly well established that order of birth is of little significance. Current thinking about the causes of mongolism is much influenced by notions of endocrine defect or dysfunction. Perhaps, as some have urged, it is the pathological correlate of cretinism, that it is due to a prenatal hyperthyroidism; but this is yet far from satisfactory establishment, although endocrine disturbance of some sort appears in practically all cases.²

Certain feeble-minded are distinguished by a condition known as *hydrocephalus*. It is notable for the great size of the head.

¹ See especially the summaries of these in Brousseau, K. and Brainard, H. G., *Mongolism: a Study of the Physical and Mental Characteristics of Mongolian Imbeciles*. Baltimore, Williams and Wilkins, 1928. Pp. 210.

² Clark, R. M., "The mongol: a new explanation," *J. Ment. Sci.*, 1933, 79, 328-336. Jenkins, R. L., "The etiology of mongolism," *Arch. Neur. & Psychiat.*, 1932, 28, 1228. Marston, L. R., "The etiology of mongolism," *Psychol. Clinic*, 1925, 16, 135-140.

But hydrocephalic cases are not necessarily feeble-minded. In arrested cases, the mentality may remain quite unaffected by the peculiarities in the development of the head. In more extreme cases there is profound idiocy.

In these there is an excessive production of the cerebro-spinal fluid. The fontanelles cannot close normally and the cranium is pushed out to conspicuous size. Sometimes the condition develops before birth and makes delivery difficult, but in the larger number of cases the onset is in the first months of life. Because of the pressure of the fluid the brain tissue is gradually destroyed. In some autopsies the brain is found to be but a shell surrounding huge ventricles. If such a condition begins early and develops progressively all mental development must eventually cease and finally life itself. Many such cases die in infancy. Other cases undergo an arrest of the disease and thus live on to the years of maturity with a large head and a more or less enfeebled mind. Sensory defects are common. The muscles are weak and there is much difficulty in their co-ordination, consequently such patients are not able to do much which requires physical activity and control. Ordinarily they are good-natured and willing. Epileptic seizures are often reported.

What from superficial observation might be called the opposite condition is that known as *microcephalus*. Obviously it means a condition in which the head is abnormally small. Tredgold says that this term is usually applied when the skull is less than seventeen inches in circumference. For a long time it was thought that this was due to some pathological condition causing the early closing of the fontanelles. Thus in a skull box of such small proportions the brain could not by any amount of squeezing ever develop normally. It is now generally recognized that the condition is one affecting both cerebral and cranial development as well, a condition which causes both to be abnormally small. The mental condition may be either that of imbecility or idiocy. Most authorities mention the

notable imitateness of microcephalics as an outstanding psychological characteristic. Otherwise they seem to have but the familiar deficiencies of feeble-mindedness.

Idiots Savants although rare are apparently of great interest to specialists in feeble-mindedness, perhaps by their contrast with the incapacity with which they have so constantly to work. They are really not idiots and only by courtesy can they be called savants. They are imbeciles who for reasons unknown have a normal development of some one trait or talent, sometimes the talent may be superior even to that of many normal minds. This of course makes them stand out strikingly in contrast to their associates. Cases of remarkably keen perception in some one sense are reported, although apparently such cases have never been systematically studied with the technique of the psychological laboratory so that reliable comparisons could be made. Instances of notable rote memory are found among idiots savants. One could recall the date of entrance of every inmate of the institution, another the significant dates and other items from the biographies of a vast number of great men. Such will repeat accurately every word of material read or heard. Some who cannot read and have but a limited vocabulary will repeat accurately sentences heard in almost any language. This unusual rote memory probably explains some of the so-called mathematical prodigies among idiots savants. They have memorized a long list of number combinations and so astonish the observer. It is probably unnecessary to add that these people are quite unable to think with the material they have memorized. They reproduce but cannot use. Manual motor skill has been notable in a few cases. Quite remarkable drawings and carvings are produced by some, but they have a very limited range within which they work and are quite unadaptable.

Moral Imbecility. This term is used to designate an alleged class of cases in which there is supposed to be a defect in the "moral faculty" accompanied by a normal endowment of in-

telligence. It is an old concept and has been much debated. Cases in support of it are reported that are admittedly difficult of interpretation, but this may be due to an incomplete case history. These are instances of children and youths who seem to be totally lacking in conscience or sympathy. One boy had tortured to death several children before apprehension. A girl working as a nurse in different families was eventually discovered to have caused the death of many babies because their crying annoyed her. Less horrible cases but no less difficult ones are also reported. Always the defect is in the moral field; and there seems always to be an incapacity to respond to training in such matters.

Those who think that the morality of an individual is based upon innate tendencies find it easy to think that those causes which produce defect of intelligence may at times be so varied as to cause defect of the moral determiner instead. Or, if one thinks of each individual as being born with a certain pattern of instincts out of which moral sentiments are subsequently constructed, it is easy to think of the moral imbecile as one born either without certain instincts essential to the moral pattern or with such a peculiar distribution of instinct strengths as to make the development of normal moral sentiments impossible. But our present knowledge of the nature of native endowment is far more in the realm of theory than of fact. Consequently it is difficult if not dangerous to make final judgments in the matter of moral imbecility. If the complete personal history of such cases could be worked out it might explain the lack of morality. Then the problem would be transferred to the psychoneurotic group. The solution of this problem must await much progress of knowledge in allied fields.

The rising belief in the existence of a personality defect now termed constitutional psychopathic inferiority (see presentation below) may throw some light on the matter. Certainly the characteristics of the so-called moral imbecile as usually described would place such cases in the constitutional psycho-

pathic group. And that would again raise the question of inherent defect because of the tendency to think of constitutional psychopaths as inherently defective. But it must also be pointed out that those who have most to do with delinquents are discarding the concept of moral imbecility. Healy and Burt in their studies of thousands of cases do not find any necessity for using the moral imbecile classification.¹ Experimental studies based on the assumption that there was a moral ability which could be measured apart from intelligence have so far not been convincing. Correlations with scores on intelligence tests are so high as to raise the question if the tests are not really testing intelligence. This may, however, mean merely the necessity of finding or developing better tests of moral judgment; but the trend of current thinking is away from the concept of a special moral ability.²

Social Aspects. The social significances of feeble-mindedness have been much emphasized. The lower grades are less dangerous because of their physical as well as mental incapacity. But the higher grades, especially those who live unsupervised in society at large, are a menace. Their ignorance, their inability to make wise judgments, their lack of organization or synthesis, and hence lack of control, and their impulsiveness, motivated by the more primitive instincts and emotions, must inevitably lead to much asocial conduct. Prostitutes, so far as known, include a large number of definitely feeble-minded. Probably many more are dull normal or borderland cases. Many paupers are doubtless feeble-minded although here reliable figures are lacking. Alcoholism and drug addiction have not infrequently been traced to the ignorance and lack of control of the mentally weak. The familiar ne'er-do-well of every

¹ Healy, Wm., *The Individual Delinquent*. Boston, Little, 1915, pp. 782-788. Tredgold, A. F. and others, "Report of a symposium on the definition and diagnosis of moral imbecility," *Brit. J. Med. Psychol.*, 1926, 6, 219-227.

² Bridges, J. W. and K. M. B., "A psychological study of juvenile delinquency by group methods," *Genet. Psychol. Monog.*, 1926, 1, No. 5. Weber, C. O., "Moral judgment in female delinquents," *J. Appl. Psychol.*, 1926, 10, 89-91.

community may be actually a moron, although some may be psychoneurotics or constitutional psychopaths.

Juvenile delinquents show a considerable percentage of feeble-mindedness. Findings here vary greatly, ranging from eight to about thirty per cent. This means that feeble-mindedness occurs far more frequently among delinquents than among non-delinquents. Criminals tested in our larger penitentiaries produce a curve of distribution of frequencies of mental ability scores quite like that of the general population. Consequently there must be other factors than defective intelligence in the production of asocial conduct.¹

The actual frequency of feeble-mindedness in society at large has of course never been determined. Of estimates there are many; and they vary according to the populations upon which the studies giving rise to the estimates have been made, also upon the methods or criteria of determination of the presence of mental defect. After a thorough review of these studies and estimates Pintner comes to the conclusion that somewhere between one and three per cent is about as close as it is possible to come at present.² Probably about four or five per cent of these are in institutions.

Caution must be constantly exercised in the diagnosis of feeble-mindedness. The mere evidence of a mental test is never adequate, valuable as test aids have proved to be. The mental test must be supplemented by a careful case history, interpreted by one who is familiar with the general facts of abnormal psychology. There may be a more significant complication with some psychopathic condition which is not revealed in the mere procedure of the intelligence test. The mental test must also be supplemented by a thorough medical examination. A grade of intelligence may be revealed by a test considerably below

¹ For a more complete discussion of this subject see the author's *Principles of Adolescent Psychology*, Chap. 15.

² Pintner, R., "Feeble-mindedness" (Chap. 20 of Murchison's *Handbook of Child Psychology*, 2nd ed.). Kuhlman, F., "The distribution of the feeble-minded in society," *J. Crim. Law and Criminol.*, 1916-17, 7, 205-218.

what a child of that chronological age should have, and on that basis the case may be classed as defective, when, as a matter of fact, the supposed intelligence defect is merely a retardation due to curable physical conditions. Most unfortunate instances are recorded of this sort of mistake. When the retarding physical conditions have been removed by medical or surgical treatment such children have made rapid progress up to normality.

In these cases the psychologist must also be watchful for delaying and disturbing attitudes constructed in the years when the child was thought to be feeble-minded. Such children may become convinced that they are not the equal of others with all the attendant distress. This forms a complex which may seriously influence their subsequent social adjustment unless wisely guided. Education in many cases is necessary to bring out the true status. There may be complications of feeble-mindedness with retardation so that a mere examination may make some appear to be lower in the intelligence scale than their actual capacity would place them. Training may eliminate the retardation effect and thus bring out the actual degree of native ability. Training cannot, however, make a normal intelligence out of one that is actually defective. If training brings any given intelligence above the borderline of feeble-mindedness then that child was never fundamentally feeble-minded but merely retarded.

It must be observed also that mental defect may be associated with most of the psychotic and psychoneurotic conditions. Obviously this must apply chiefly to the higher degrees of feeble-mindedness. The number of feeble-minded cases admitted to hospitals for mental diseases because of psychotic complications is quite small; but it is found combined with schizophrenic traits, with manic-depressive psychoses, paranoid trends, hallucinatory attacks, etc. Epileptic complications are also reported. Complication with psychoneurotic symptoms may be of more frequent occurrence.

Constitutional Psychopathic Inferiority. Whatever name be used for this group of abnormalities will be found unsatisfactory to some one. Many are in current use. Constitutional immorality, constitutional psychopathy, psychopathic personality, moral insanity, moral imbecility, socio-path, and psychosatiopath are some of those currently in use and proposed. The favorites at present appear to be the one used at the head of this section and the term psychopathic personality. Without much doubt the confusion over names is here, as so often, due to the vagueness of the concept to be designated.

Many forms of conspicuously abnormal patterns of personality and behavior have long been recognized which could not easily be fitted into any of the psychosis or psychoneurosis groups. Some, it is true, have tried to force them into one or other of the groups but it is now becoming increasingly clear that there is a peculiar class of persons, probably rather large, which are certainly not to be accepted as normal and with equal certainty are not psychotic in the usual definition of that term. If they be psychoneurotic or not is still more of a question. In the past many special names and classes have been devised for them. There are the cases once called pathological liars characterized by an extraordinary ineptitude and absurdity in falsification; there is the long list of sexual perversions and abnormalities known variously as homosexuality, inversion, sadism, masochism, satyriasis, nymphomania, and so on; there are the alcoholics sometimes termed dipsomanias, and the many different forms of drug addiction; there are the chronic hobos and nomads; and there are the querulents, the mattoids, the swindlers, the kleptomanias, and the morally insane or morally imbecile. All these are now being brought together and thought of as having something in common.

Many attempts have been made to describe the general characteristics of this group.¹ From these descriptions one gathers

¹ Some of the best descriptions will be found in the following books and papers: Kahn, Eugen, *Psychopathic Personalities*. New Haven, Yale Press, 1931. Pp. 521. May, J. V., *Mental Diseases*. Boston, Badger, 1922. Chap.

very quickly that there is no very distinctive pattern or set of especially distinguishing characteristics. Probably the most emphasized features are the constant egocentricity, the impulsiveness, the inconsistency of conduct, and the strange failure to evaluate or appreciate the consequences of actions as most people would do. There seems to be a lack of balance or a defect of control. Orbison has coined for them a happy phrase. He says that they appear to have a "faulty interlocking mental directorate."¹ There is also a peculiar facility in rationalization. No matter what or how anti-social their conduct they can always develop a curiously plausible explanation and justification. Frequently they appear to lack any well-established life objective. Apparently they are lacking also in normal educability. Perhaps it would be better to say that up to the present all efforts to effect changes in their conduct through educational and disciplinary measures have failed. And there seems to be no significant relationship to the degree of mental ability or intelligence.

The social significance of these forms of abnormality cannot easily be overstated. They may appear in any walk of life. They may have a high or low intelligence. They may acquire knowledge and a kind of culture and be socially quite charming. They even achieve positions of no little responsibility and social distinction before their defects become generally apparent. Because of their social accomplishments and facility in rationalization they frequently acquire many friends, sometimes even a large personal following. Then when delinquencies appear or charges are made against them these friends and followers are incredulous and loath to believe what seems to them utterly impossible.

XVII. Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. XXVII. Orbison, T. J., "Constitutional psychopathic inferior personality," *J. Delinq.*, 1926, 10, 428-433. Strecker, E. A. and Ebaugh, F. G., *Practical Clinical Psychiatry*. Phila., Blakiston, 1931. Chap. XI. See also other general references on this subject at the end of this chapter.

¹ Orbison, T. J., "Constitutional psychopathic inferior personality," *J. Delinq.*, 1926, 10, p. 430.

It should not be inferred from this presentation that all constitutional psychopaths are criminals. Far from it. But without being criminal their inconsistency and self-centeredness and facility in rationalization may lead them into conduct which causes their relatives and friends and associates no little grief. Noyes has most happily described these cases as ranging all the way from "queerness to criminality."

Interpretations of Constitutional Psychopathic Inferiority. The traditional interpretation of all these forms of abnormality was in terms of some intrinsically determined defect. And there are not a few who hold to like explanations today. The fact that people differ in the degree of their endowment of intelligence leads easily to the supposition of the existence of other intrinsically determined traits or abilities and the possibility of individuals having a greater or lesser degree of endowment of these other traits. Kleptomaniacs would in such terms be endowed with an especially strong acquisitive instinct. The various kinds of sexual abnormality would likewise be assumed to have a peculiar endowment of sexuality. Hoboes and nomads would have an over-endowment of the wandering instinct. The lack of consistency, the failure to appreciate, and the egocentricity has been explained as attributable to a defective endowment of conscience conceived of as a faculty. Kahn thinks of the defective endowment as possible not only in quantitative differences in particular traits but also in the possibility of developing control and synthesis or integration of the personality.¹

The notion of an intrinsic defect is supported by the failure of these cases to respond to educational and disciplinary measures. And it is further supported in the thinking of many by the discovery that the troublesome traits of the psychopath can usually be traced back in one form or another to comparable behavior problems in their childhood. Psychopaths in childhood show a history of marked stubbornness, anger spells or

¹ Kahn, Eugen, *Psychopathic Personalities*. New Haven, Yale Press, 1931. Pp. 521.

temper tantrums, sulkiness, destructiveness, quarrelsomeness, shamelessness, and such indications of nervous weakness or delayed development as enuresis.

Here, as elsewhere, the psychoanalytic movement has had its influence. There are those who contend that all of these forms of constitutional psychopathy are more adequately and satisfactorily explainable in terms of a psychogenesis, that the existence of behavior problems in the childhood history of psychopaths points merely to a very early misdirection of development. All the familiar machinery of the psychogenic school of thinking is applied in the usual way. Very early in life there was some maladjustment, some inhibition, the establishment of conflicts within the personality organization, unsatisfied urges or drives, the formation of complexes, feelings of insecurity, and all the distortion of development that grows out of these.

Certainly case studies do reveal in psychopaths ample evidence for thinking that feelings of insecurity and unsatisfied desires are present; but if these be causes or consequences is not so clear. After working with a few cases of constitutional psychopathy, it is easy to believe that they are caused by an intrinsic defect because they are so exasperatingly unresponsive to any kind of effort on their behalf. Yet, so many other traits that were once thought to be of intrinsic determination have turned out to be matters of acquisition and unfortunate experience, it must be admitted that perhaps these psychopaths can also be satisfactorily explained some day in terms of the experiences of infancy and early childhood. It is also possible that there may be both kinds. Some may be due to intrinsic defect and some may be due to an unfortunate history.

The terms *sadism* and *masochism* have come out of the study of certain forms of constitutional psychopathy and have come into such frequent use by writers in many fields of psychopathology that it seems wise to give them some further consideration.

The psychoanalysts think of sexuality not as a single instinct but as a group of instincts. One of these is that curious pleasure often sought for and found in causing discomfort or even pain in the loved person. Although the necessary relationship to the sex urge of this pleasure in the suffering of another is open to question, it is nevertheless quite true that there is in human nature such a trait. How it got there is even more uncertain. Children who are most of the time very fond of their animal pets will at times apparently find much pleasure in teasing, if not actually torturing, them. Initiation ceremonies among civilized as well as savage people often reach a degree of severity which is painful to the initiate, although it may be highly amusing to those who put the initiate through them. The generosity with which many newspapers publish all the gruesome details of a murder or a seduction or an execution and the ready sale for similar material in cheap magazines and in novels sometimes not so cheap indicates that many people find pleasure in reading of such things, a pleasure in the suffering, actual or imaginary, of others. Normally this trait subsides to relative insignificance, the "libido is shifted" from it to more desirable behavior patterns; but there are here and there individuals in whom the trait remains active and prominent. It reminds one at once of the fixations already and so often mentioned. When this trait is definitely associated with the sex desires, it is then that it is usually termed *sadism*; but the same term will be found not infrequently used to designate an unusual development or retention or fixation in an individual of this delight in the suffering of others quite without any necessary implication of sexual abnormality.

The counterpart of sadism is called *masochism*. The careful observer of human nature will soon discover that many people find a curious sort of pleasure in being teased by those they love. The children's pets when being tormented instead of loved, as is usual, seem not entirely to avoid their little masters or mistresses, and sometimes seem to enjoy in a way the being

teased. That wives being beaten by brutal husbands often rebel against external interference is a commonplace. The lover not only seems to enjoy teasing the loved one, but in such instances the teased seems to enjoy being teased. When this trait is abnormally prominent, and in such cases usually associated with the sex instinct, it is termed masochism; although the adjective masochistic is often applied to tendencies in that direction which may not be taken to imply any necessary association with sex.

It will doubtless occur to most readers that this trait might be thought of as a phase of the drive or urge termed the will-to-power or superiority, because, by being the necessary center of interest and affection, the loved and teased person exercises a sort of power over the lover. Both the pleasure in causing suffering and the pleasure in being made to suffer might then be thought of as phases in the development of behavior motivated by the will-to-power drive, exactly as mother love and father love are phases in the development of the sex-love behavior; and, in like fashion, instances of sadistic and of masochistic behavior might be thought of as fixations somewhere in that developmental course. But, until explanations for these abnormalities are much better established, there remains also the possibility that both of these may actually be due to a defective endowment.

Genius. Vast as is the literature on genius it is nevertheless true, and most regrettably so, that personalities classed as geniuses have been subjected to far less systematic study than have the feebleminded. Geniuses are much less accessible. And it may be that genius occurs less frequently. As in the case of the feebleminded, the problem of defining what is meant by the term genius has been a difficult one, and it can scarcely be said that the problem has yet been solved. Some contend that the making of a satisfactory definition is impossible and they point to the changing standards of judgment which cause a name hailed as a genius by one generation to be judged quite

differently by another. Cattell and others have thought that this matter of social recognition might be measured by determining the relative amount of space devoted to a given name in encyclopedias and biographical dictionaries. By this means Cattell obtained a list of the thousand most eminent names in history, and arranged them in order of their eminence. But is eminence the same thing as genius? Cattell apparently thought not.¹

In a later study Cox² concluded that eminence is the best available measure and thought that in general great eminence and great genius coincide. She has sought to test this by determining the intelligence quotients for three hundred geniuses, by comparing biographical data with intelligence test norms. Although the correlation which she obtained between intelligence and order in eminence is very low, she has nevertheless demonstrated the probability that people who achieve great eminence are people of high intelligence.

In terms of the intelligence tests a genius is supposed to be a person with an intelligence quotient higher than 140. Terman found over a thousand of these in California schools and subjected them to a most painstaking study.³ He did not, however, assume that all of these were destined to be recognized by the world as geniuses and in so doing questioned by implication if it be proper to classify a person as a genius merely because of a superior degree of intelligence.

It will be recalled that a low degree of intelligence proved to be far from a complete explanation of the feeble-minded, and that the tendency was now to consider personality differences

¹ Cattell, J. McK., "A statistical study of eminent men," *Pop. Sci. Mo.*, 1903, 62, 359-377.

² Cox, Catherine M. and others, *The Early Mental Traits of Three Hundred Geniuses*. Stanford University, 1926. Pp. 842.

³ Terman, L. M. and others, *Genetic Studies of Genius*. Vol. I. *Mental and Physical Traits of a Thousand Gifted Children*. Stanford University, 1925. Pp. 648. Burks, B. S., Jensen, D. W. and Terman, L. M., *The Promise of Youth*. (Vol. III of *Genetic Studies in Genius*.) Stanford University, 1930. Pp. 508.

among the feeble-minded as of great importance. The same is very likely true at the genius end of the scale. In addition to the possession of a high degree of intelligence there are evidently other factors of personality which are quite as important in the making of the genius. Critics have frequently pointed out that social conditions are often responsible for revealing a genius to the world. From this they conclude that there have been many potential geniuses who are unknown and who probably never will be known, although in rare instances a genius is recognized as such long after his death. Probably these social conditions entered influentially into the very process of forming the personality subsequently hailed as a genius. Then it is to the character traits other than intelligence and to their making that one must look for more light on the nature of genius. As a matter of fact character traits of genius have frequently been discussed and presented at length by those interested in the interpretation of genius; but far too often they have been considered under the bias of some pet theory, or without knowledge of adequate concepts for classification and interpretation. Pregnant as the subject is with possibilities for the future one must nevertheless begin with a survey of what has been done.

In 1888 Cesare Lombroso published a book on genius which may be said to have inaugurated the *degeneracy theory* of genius. The evolutionary mode of thinking was already influential and the notion of degeneration had already been proposed by a Frenchman, Morel. Lombroso's examination of the characteristics of geniuses led him to think that their great over-development of certain capacities or traits was accompanied by certain defects which indicated an instability of organization pointing toward degeneration. Lombroso's idea was popularized by Max Nordau in his well-known volume on *Degeneration*. The modern student of psychology will find much of the psychology of Nordau defective because of the advances in knowledge since his time. Nordau was also guilty of using a

defective method of reasoning. He observed, for example, the symptom known as echolalia, a meaningless repetition, and upon examining the works of poets found that they also present what to him was meaningless repetition. This he said was echolalia in the poet. He found that the type of thinking which we term today fantasy thinking is conspicuously present in certain forms of mental disease. Of course he could find such fantasy thinking in the work of artists and men of letters and this he considered evidence of mental disease in the artists and men of letters themselves. The preference for peculiar costumes which some geniuses have manifested, the periods of melancholy and skepticism which are recorded in the lives of geniuses — these and others Nordau said were indications of degeneration because he knew them to be symptoms of mental disease. This is a trap into which many students fall. One cannot safely take symptoms out of their settings, generalize them and then use them as criteria of disease. The repetitiousness of a poet may in the abstract bear some resemblance to echolalia, but the general behavior of the patient in whom echolalia is one symptom differentiates it at once from the repetitiousness of the poet. The occasional appearance of doubt or skepticism or depressing emotion does not necessarily signify disease. These may be determined as morbid only after consideration of the apparent causation, course and outcome. Melancholy must not be confused with melancholia.

But in spite of the defects of Nordau's reasoning¹ many think that geniuses are at least partially insane. This notion is supported by the fact often presented that many geniuses have had some form of psychosis. Dostoievski and Napoleon were epileptics; Nietzsche was for many years hopelessly insane; John Clare spent a large share of his life in an insane asylum, during which he wrote some excellent poetry; Christopher Smart wrote what many think his greatest poem while confined for a condition described as religious mania; that

¹ See George Bernard Shaw's delightful essay entitled *The Sanity of Art*.

Tasso long suffered a disordered mind is now seldom questioned ; Cowper also was insane, and a long list of others could be made up even in spite of the controversies which rage around the names of some of the great who have been thought psychotic. Many, if not insane, would be classified today as presenting some form of psychoneurosis. But one must not commit the fallacy of generalizing from a few cases. One can readily recall a long list of the world's great who were not insane. Washington, Grant, Lee, Jefferson, Browning, Mark Twain, William James, and a host of others come easily to mind and these were not insane. In Terman's study of a thousand gifted children he included a lengthy questionnaire designed to discover psychopathic tendencies. The response to this gave a higher average, indicating greater normality of response, for the gifted children than for the control group of unselected children. If insanity were somehow an essential feature of genius then our hospitals for the insane should be the most productive sources of philosophy, literature and art. Such is obviously not the case. The consequences of the discussion must be much the same as that in the discussion of feeble-mindedness. Just as the feeble-minded may also be psychotic or psychoneurotic, genius many suffer mental disease, but not necessarily so. And it is probably also true that the nature of the organization which produces the genius, coupled with the kind of life the genius is forced to live, is likely to produce mental disease in far greater frequency than is the case with people of more ordinary endowment who lead simpler lives.

A modified form of the degeneracy theory is the conception of genius as in large part a manifestation of a constitutionally psychopathic endowment. Some of the difficulties of this concept of constitutional psychopathic inferiority have already been presented above. Nevertheless, it is now extensively used and seems to fit many instances of genius admirably. The thought is that the genius began life with an endowment of intelligence equal to or better than the average and with in-

trinsically determined tendencies to the development of a personality characterized by marked facility in action, indifference to opposition because of the overvaluation of his own ideas, richness of emotional response, poverty of inhibition, sensitiveness in the popular use of the term, lack of moderation, restlessness, facility of imagination, and an indifference to the present which makes the person appear impractical.

One so endowed and yet forced to live in a world of more stable and better inhibited human beings would be certain to suffer much maladjustment. But, one so endowed would be admirably prepared to do new things, to do old things in new ways, to be highly sensitive to meanings the rest of mankind might fail entirely to perceive, to do the unusual, to lead in untrodden ways, to be creative in both the realms of thought and of action. The social situation would obviously contribute much to the production of such personalities, although rather by opposition and misunderstanding than by provision of aid and opportunity. This, also, corresponds to what is known of the appearance of many recognized persons of genius.¹ Perhaps it is the best explanation for some of them.

A popular but crudely psychological notion has gained currency in recent years that genius lies in the special endowment of a subconscious personality which is held in check much of the time by the conscious organization, and that drugs and disease give release to this subconscious personality permitting it to rise to creative expression.² Many cases of alcoholism and tuberculosis and of diseases of the central nervous system are martialed in support of this contention. One obvious diffi-

¹ Kretschmer, E., *The Psychology of Men of Genius*. New York, Harcourt, 1931. Pp. 256. Lange-Eichbaum, W., *The Problem of Genius*. New York, Macmillan, 1932. Pp. 187. Witty, P. A. and Lehman, H. C., "Drive: a neglected trait in the study of the gifted," *Psychol. Rev.*, 1927, 34, 364-376; "Nervous instability and genius: some conflicting opinions," *J. Abn. & Soc. Psychol.*, 1930, 24, 486-497; "Nervous instability and genius: military and political leaders," *J. Soc. Psychol.*, 1932, 3, 212-234.

² Jacobson, A. C., *Genius*. New York, Greenberg, 1926. Pp. 160. Marks, Jeannette, *Genius and Disaster*. New York, Adelphi, 1925. Pp. 185.

culty lies in the naïve assumption of a subconscious personality bearing the special endowment, an assumption highly imaginative and gratuitous and for which there is little justification. Even where drugs and disease do seem to remove inhibitions there is often ample evidence that the special abilities were present prior to the presence of the drug or disease effects. Therefore they were not the special property or endowment of a subconscious personality. That drugs have often served as a means of escape from a disagreeable and hampering present reality no one would question for a moment. By supplying such a deadening of perception and feeling for the present, creative activity may be facilitated. But it is also true that a little more of the depressant effects of drugs or disease has not resulted in a still further release of the powers of genius but has depressed or deadened them also.

Contrasting sharply with the foregoing is what might be called the *prophetic theory* of genius. Critics of Nordau and Lombroso quickly pointed out that genius might not be an indication of degeneration at all but rather that it might be the bud of a new and higher direction of development. The most illustrious advocate of this interpretation was G. Stanley Hall.¹ For this theory adolescence is sharply contrasted with maturity. Emphasis is placed upon the unconventionality, the impulsiveness, the emotionality, the courage, and the lack of habit domination as characteristics of youth. Maturity, on the other hand, is presented as conventional, constant, emotionally repressed or steadied, hesitant about new ways of doing and thinking, and above all habit-dominated. The genius is assumed to be creative, daring, ready to lead in new and untried ways, and is consequently defined as the prolongation of perfect adolescence. In defense of this interpretation not only the characteristics of geniuses are pointed to as identical in the main with those of youth but a long list of the creations of genius is presented. Ruskin composed *Modern Painters* at 24; Bryant

¹ *Adolescence*, chaps. IV and X.

wrote *Thanatopsis* at 17; Chatterton died at 17, having already written brilliantly; Joan of Arc restored France at 16; Berkeley had published his famous essay on vision at 25 and had done other philosophical work. Lancaster¹ ascertained the average age of first distinct success or certain demonstration of genius for several different groups as follows: 100 actors at average of 18 years, 50 poets at 18 years, 50 artists at 17 years, 100 scientists at 19 years.

According to this prophetic theory also racial progress is to be found not so much through the emphasis upon, and the preservation of, maturity as upon the preservation of, and the prolongation of, adolescence. If maturity is permitted to encroach upon the growing period and thus to force youth too soon into the mold of maturity then the progress of the race will be impeded, if not stopped, and degeneration allowed to set in. So in the prolonged adolescence of the genius and in the frequency of genius is to be seen the hope of the future of the race.²

Apparently there is much truth in this theory, just as there is much basis for the statement that genius is insane or disposed by its nature to mental disease and that genius is determined by an exceptionally high intelligence, but like the others it does not constitute an adequate explanation of genius. G. Stanley Hall himself frequently insisted that women were much more youthful in maturity than were men, that they maintained through maturity far more than did men the characteristics of adolescence. If that were true and if the prophetic theory of genius were an adequate explanation, then the world should have produced far more female than male geniuses. But this has been disproved by every study of sex frequency³

¹ Lancaster, E. G., "Psychology and pedagogy of adolescence," *Ped. Sem.*, 1897, 5, 61-128.

² Because so much attention has been given to the works of genius produced in adolescent years it is instructive to read a comparable collection of works of genius produced after the age of forty. See Nelson, H., "The creative years," *Amer. J. Psychol.*, 1928, 40, 303-311.

³ See Cattell, J. McK., "A statistical study of eminent men," *Pop. Sci. Mo.*, 1903, 62, 359-377; Castle, Cora, *A Statistical Study of Eminent Women*.

in genius. This throws doubt upon the interpretation not only of the characteristics of the female but upon the theory of genius as prolonged adolescence as well. It is furthermore not difficult to find in most communities men of ability who seem to have maintained the spirit of youth as much as many so-called geniuses but who will certainly never be known to fame. It might be argued that this is because of the lack of the proper social situation to reveal their genius. Such an argument cannot of course be put to the test and so remains unanswerable. But the prolonged adolescence theory does not explain why one individual should be a musical genius, another a military genius, another a poetic genius, another a religious genius, and so on. There must be other factors still to be uncovered.

In the face of such considerations the theory of *special trait endowment* is attractive. It presents an easy, perhaps too easy, way out of the problem. It is simple. It assumes that the genius is born with a peculiar predisposition to the development of exceptional superiority in some field of human endeavor. Just as we are born with nerve patterns ready made for sucking and swallowing and are supposed to be born with a tendency to develop nerve patterns for fear and anger and collecting and the other instincts, so certain individuals are supposed to be born with tendencies to early and elaborate development of certain traits which the world eventually acclaims as genius. Thus we hear of the special endowment which results in the musical genius, of the special endowment which results in the mathematical genius, and likewise for the military, the poetic, the religious and all the other forms of genius. If this be a matter of intrinsic determination, then one would expect that other members of the immediate family should share, to some extent at least, in this special trait endowment. Apparently this is frequently the case. Studies of the families of genius do reveal greatness in the ancestry, in others of the

New York, Science Press, 1913. Pp. 90; and Ellis, Havelock, *A Study of British Genius* (Rev. ed.), Boston, Houghton, 1926. Pp. 396.

same generation and in the descendants.¹ But the validity of this theory of special trait endowment still remains to be established. It must await much more research in genetics.

The trait theory inevitably raises a question about the difference between talent and genius. There are many people of great talent who could not well be called geniuses. Havelock Ellis² has answered this perhaps as well as anyone by saying that talent is merely the ability to do better than the rest of us what the rest of us can all do moderately or indifferently well, but that a genius is one who can do what the rest of mankind cannot do. This is placing a high and somewhat indefinite estimate upon who should be included in the genius class but if taken to mean a matter primarily of degree it might be accepted, pending a satisfactory psychological analysis of genius.

Recent years have seen the development of a very different attack upon the problem of genius. It is not interested in intelligence tests and is apparently not much concerned with the problematic feature of native endowment but has sought to explain the character traits not of genius as a whole but of certain particular geniuses by making an elaborate study of the development and social adjustments of the individual. It is peculiarly the contribution of the psychoanalytic school. Because the method is the same as that which has resulted in the psychogenic theory for so many forms of mental disease, the theory growing out of these studies might well be termed the *psychogenic theory* of genius. Psychoanalysts have carefully scrutinized the biographies of great men and women and all available material contributing thereto. In the light of what is so revealed they then make an equally careful study of the work of the person in question as a further source of data for explanatory purposes. Their interpretations are given in terms of the now familiar concepts and language of psychoanalytic

¹ Gun, W. T. J., "The kin of genius. A study of the families of great men," *Eug. Rev.*, 1928, 20, 82-88.

² Ellis, Havelock, "The mind of woman," *Atlantic Mo.*, 1916, 118, 366-374.

psychology. Charlotte Brontë¹ is interpreted as a case of father fixation. She eventually fell in love with a married man who was a surrogate for her father, the heroes of her novels are all descriptions of this same father type, and when she did marry it was with a man who would take her father's place in her life. Edgar Allan Poe² is found to be a case of mother fixation along with other psychoneurotic maladjustments. The mother image appears again and again in his poems and his ineffectual and peculiar relations with women are thought to be conditioned by this same fixation. Thomas Jefferson³ is said to have had an unresolved conflict with the father image as a consequence of his childhood experience with a tyrannical father, and that this conflict gave to his life its peculiar bent. Abraham Lincoln⁴ had a mild conflict with a father image, which in mature years was resolved. This resolution brought about his well-known piety. But far more important was the mother fixation which ruled his life and caused the emotional depression which at certain periods approximated psychotic proportions. Andrea del Sarto, the great Italian artist, known for his skill in technique and for his lack of that which is so often referred to as the fire of genius, is explained in terms of a very complex conflict involving both masochism and a repressed hatred for the woman to whom he was attached. This kept him attached and devoted to a female tyrant and prevented his doing the sort of work which the art-loving world acclaims as the product of genius. Perhaps he was too completely repressed.

Of such psychoanalytical studies of genius there have been a very large number. The nature of the interpretations may

¹ Dooley, Lucile, "Psychoanalysis of Charlotte Brontë," *Amer. J. Psychol.*, 1920, 31, 221-272.

² Pruette, Lorine, "A psychoanalytical study of Edgar Allan Poe," *Amer. J. Psychol.*, 1920, 31, 370-402.

³ Barnes, H. E., "Some reflections on the possible service of analytical psychology to history," *Psychoanal. Rev.*, 1921, 8, 22-37.

⁴ Clark, L. P., "A psychological study of Abraham Lincoln," *Psychoanal. Rev.*, 1921, 8, 1-21.

appear at first rather to support the contention that genius is insanity. A moment's pause, however, will recall that insanity is but a social distinction and not a scientific one. Psychoanalysts in making such studies ignore the matter of sanity or insanity; they seek only to explain the works and peculiarities of the individual. In some instances such studies may reveal a definitely psychotic condition, in other instances they may reveal a psychoneurotic condition and present a fairly adequate explanation therefore. And it will be further recalled that some psychoneurotic traits of a comparatively simple nature are extraordinarily frequent even among people commonly thought of as quite normal. So the findings of the psychoanalysts in their studies of genius can scarcely be said to lend support any more than other studies to the notion that geniuses are insane and degenerate unless it be insisted that any form of maladjustment is degeneracy. On the whole the psychoanalytic studies have supported the notion that the genius is not to be thought of as a type nor as merely an unusually gifted individual but as a peculiar product of the interplay of the developing personality and the environment. The individual might be especially well endowed by nature in some ways and defectively endowed in others or he might have what we vaguely term a normal endowment, but the history of the interaction between the individual and his environment in the case of the genius will be found to be decidedly peculiar. Perhaps some day these case histories of geniuses can be summarized and reduced to general principles. Significant progress is now being made in this direction.¹

¹ Lange-Eichbaum, W., *Genie, Irrsinn und Ruhm*. München, Reinhardt, 1928. Pp. 498. (Contains trait summaries of a long list of famous persons and a bibliography of 1652 titles.)

SELECTED REFERENCES

Feeble-mindedness

- Barr, M. W. and Maloney, E. F., *Types of Mental Defectives*. Phila., Blakiston, 1920. Pp. 179.

- Brousseau, K. and Brainard, H. G., *Mongolism: a Study of the Physical and Mental Characteristics of Mongolian Imbeciles*. Baltimore, Williams and Wilkins, 1928. Pp. 210.
- Doll, E. A., *Clinical Studies in Feeble-mindedness*. Boston, Badger, 1917. Pp. 232.
- Doll, E. A., Phelps, W. M. and Melcher, R. T., *Mental Deficiency Due to Birth Injuries*. New York, Macmillan, 1932. Pp. 289.
- Goddard, H. H., *Psychology of the Normal and the Sub-normal*. New York, Dodd, 1919. Pp. 349.
- Goddard, H. H., *Feeble-mindedness*. New York, Macmillan, 1914. Pp. 599.
- Hollingsworth, L. S., *The Psychology of Subnormal Children*. New York, Macmillan, 1920. Pp. 288.
- Itard, J. M. G., *The Wild Boy of Aveyron* (Trans.). New York, Century, 1932. Pp. 104.
- Myerson, A., *The Inheritance of Mental Diseases*. Baltimore, Williams and Wilkins, 1925. Chap. VI.
- Myerson, A., "Nature of feeble-mindedness," *Amer. J. Psychiat.*, 1933. 12, 1206-1226.
- Pintner, R., "Feeble-mindedness" (Chap. 20 of Murchison's *Handbook of Child Psychology*, 2nd ed.).
- Rosanoff, A. J., *Manual of Psychiatry*. New York, Wiley, 1927. Part II, chap. I.
- Shuttleworth, G. and Potts, W. A., *Mentally Deficient Children*. Phila., Blakiston, 1916. Pp. 284.
- Tredgold, A. F., *Mental Deficiency*. New York, Wood, 1914. Pp. 400.

Constitutional Psychopathic Inferiority

- Bryant, R. H., "The constitutional psychopathic inferior a menace to society and a suggestion for the disposition of such individuals," *Amer. J. Psychiat.*, 1927, 6, 671-689.
- Huddleson, J. H., "Connotation of constitutional psychopathic inferiority without psychosis," *J. Amer. Med. Asso.*, 1926, 86, 1960-1964.
- Kahn, Eugen, *Psychopathic Personalities*. New Haven, Yale Press, 1931. Pp. 521.
- Karpmann, Ben, "The psychopathic individual: a symposium," *Ment. Hyg.*, 1924, 8, 174-201.
- May, J. V., *Mental Diseases*. Boston, Badger, 1922. Chap. XVII.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. XXVII.

- Smith, M. H., "The psychopathic personality," *J. Ment. Sci.*, 1925, 71, 683-694.
- Strecker, E. A. and Ebaugh, F. G., *Practical Clinical Psychiatry*. Phila., Blakiston, 1931. Chap. XI.
- Visher, J. W., "A study in constitutional psychopathic inferiority," *Ment. Hyg.*, 1922, 6, 729-745.

Genius

- Burks, B. S., Jensen, D. W. and Terman, L. M., *The Promise of Youth*. (Vol. III of *Genetic Studies in Genius*). Stanford University, 1930. Pp. 508.
- Cattell, J. McK., "A statistical study of eminent men," *Pop. Sci. Mo.*, 1903, 62, 359-377.
- Cox, Catherine and others, *The Early Mental Traits of Three Hundred Geniuses*. Stanford University, 1926. Pp. 842.
- Dooley, Lucile, "Psychoanalytic studies of genius," *Amer. J. Psychol.*, 1916, 27, 362-416.
- Ellis, Havelock, *A Study of British Geniuses* (Rev. ed.). Boston, Houghton, 1926. Pp. 396.
- Hirsch, N. D. M., *Genius and Creative Intelligence*. Cambridge, Sci-Art, 1931. Pp. 339.
- Klineberg, O., "Genius," *Encyclopaedia of Social Science*, Vol. 6.
- Kretschmer, E., *The Psychology of Men of Genius*. New York, Harcourt, 1931. Pp. 256.
- Lange-Eichbaum, W., *The Problem of Genius*. New York, Macmillan, 1932. Pp. 187.
- Lange-Eichbaum, W., *Genie, Irrsinn und Ruhm*. München, Reinhardt, 1928. Pp. 498.
- Lombroso, Cesare, *The Man of Genius*. London, Scribner, 1895. Pp. 370.
- Nordau, Max, *Degeneration*. New York, Appleton, 1896. Pp. 566.
- Terman, L. M. and others, *Genetic Studies in Genius*, Vol. I. *Mental and Physical Traits of a Thousand Gifted Children*. Stanford University, 1925. Pp. 648.
- Terman, L. M. and Chase, Jessie M., "The psychology, biology and pedagogy of genius," *Psychol. Bull.*, 1920, 17, 397-409 (Review of ninety-five articles).
- Witty, P. A. and Lehman, H. C., "Nervous instability and genius: some conflicting opinions," *J. Abn. & Soc. Psychol.*, 1930, 24, 486-497.
- Witty, P. A. and Lehman, H. C., "Nervous instability and genius: military and political leaders," *J. Soc. Psychol.* 1932, 3, 212-234.

CHAPTER XIV

SLEEP AND ITS ABNORMALITIES

GENERAL CHARACTERISTICS, INTERMEDIARY STATES, PHYSIOLOGICAL STUDIES, "DEPTH OF SLEEP," MOTILITY IN, AMOUNT OF, PARTIAL, THEORIES, "SLEEP CENTER," ABNORMALITIES (EFFECTS OF LOSS OF SLEEP, INSOMNIA, NIGHT TERRORS, WALKING IN SLEEP, PROLONGED SLEEP STATES), NARCOLEPSIES, SLEEP OF THE INSANE, DRUGS AND SLEEP.

Sleep is obviously not abnormal, and yet there can be no absurdity in the consideration of sleep in connection with the study of abnormal phenomena. Sleep has at times and by some people been thought to be more akin to abnormal states than to the normal waking condition. The accumulation of experimental data has now, however, pretty well dispersed the notion of abnormality and, in spite of the confusion which still exists in some of the theoretical argumentation, has brought us to a much clearer notion of the nature of sleep. But there are abnormal ways of sleeping, some of which approach to very serious extremes, just as there are abnormal forms of waking consciousness. Hypnotism has been misinterpreted by some as a form of normal sleep. Hysteria has its sleeplike forms. Hence for these reasons at least it is highly important for the student of abnormal psychology to become conversant with the current knowledge of the nature of sleep.

General Characteristics. Sleep is as a rule preceded by a period of drowsiness in which continued attention is difficult, the eyes become dry and the eyelids heavy and prone to close; the awareness of fatigue becomes increasingly insistent. Eventually the individual gives up to it and either falls asleep where he is or retires to bed. Very frequently, however, people go to

bed and promptly to sleep without any insistent consciousness of fatigue or preliminary drowsiness. Such instances call attention to the nature of sleep as a reaction to a definite and regular set of stimuli. When all of the usual arrangements for the night have been completed then the individual responds to that set of stimuli and goes to sleep.

In sleep the eyes are usually closed, although there are rather frequent exceptions to this, the eye balls are rolled up and inward and the pupils constricted. The pulse rate is decreased and the breathing is slower and deeper, sometimes more audible. The voluntary musculature seems to be quite completely relaxed, although this is not always the case. People are known to sleep in sitting positions in which complete relaxation is impossible. Less often people sleep while standing or while on horseback, and soldiers report the experience of sleeping while on the march. Sensory thresholds are ordinarily raised although responses of a simple nature can be quite readily produced. The sleeping person will often respond to commands or requests which call for no more than some simple movements in response. The knee jerk reflex is usually reported to be absent.

Intermediary States. Both in going to sleep and in waking from sleep it is often possible to detect and to describe a sort of intermediary condition between sleeping and waking. Sometimes this is considerably prolonged but rarely so.

Waking from sleep means normally a rather rapid readjustment of the sensory thresholds to those of the waking state, a resumption of the cognitive and affective processes of waking life, an increase of muscular tension, opening of the eyes and in general a return to the condition of full consciousness. The rapidity with which this return is achieved varies greatly. Some people, even after getting up and moving about, are still for a time in a condition comparable to the drowsiness which preceded sleep, while others come to full consciousness quite promptly.

For these two intermediary states some prefer to use the special designations hypnagogic and hypnopompic, but in practice such careful distinctions are not ordinarily made. It is more usual to designate any intermediary condition between sleeping and waking as a hypnagogic state. Some prefer the term hypnoidal, although there is danger in using this term of confusion with its use for the earlier stages of hypnosis.

These states are sometimes of no little psychological interest because of the phenomena known as hypnagogic hallucinations which occasionally occur in them. These may be genuine hallucinations, pseudo-hallucinations, or illusions stimulated peripherally by the idio-retinal light. Some have thought of them as dream phenomena coming into this intermediary condition.¹

Dunlap² reports a lowering of attention before sleep, that the dales in the attention curve become increasingly longer than the peaks. He also reports a reduction in the range of attention. The well mechanized associations he found were not affected in drowsiness but the finer controls and associations were impaired and learning was abolished.

Physiological Studies. The trend of the physiological findings on sleep can be indicated by a brief summary. The notion, once current and attractive, that fatigue was the cause of sleep and that fatigue was the effect of a special substance called "kenotoxin," produced by muscular work, has been effectively disproved.³ Changes in the nuclei and general appearance of the nerve cells as a consequence of activity were long ago demonstrated by Hodge and are amply presented in all physiologies. Since that time Piéron⁴ has demonstrated the presence in the blood and brain and cerebro-spinal fluid of dogs kept awake

¹ See discussion of these in chapter III.

² Dunlap, K., "Sleep and dreams," *J. Abn. Psychol.*, 1921, 16, 197-209.

³ See especially Lee, F. S. and Aronovitch, B., "On Weichardt's fatigue toxin," *Amer. J. Physiol.*, 1924, 69, 92-100; and Lee, F. S., "Additional data concerning Weichardt's supposed fatigue toxin," *Amer. J. Physiol.*, 1924, 69, 101-106.

⁴ See reference list.

for many hours (30-500) of a special substance which he calls hypnotoxine. This may be a factor in sleep.

Observations on the blood pressure, taken before going to sleep, shortly after, and then at intervals through the night up to and including full waking in the morning, reveal that the pressure falls upon going to sleep and reaches its lowest level early in the sleep period. After that the pressure rises slowly and irregularly to the point of waking.¹

A number of plethysmographic studies have been made to determine the nature and course of changes of circulation in sleep (for summary and references see Howell's *Physiology*). These have indicated a dilatation of the limbs of the body, signifying an increase in the quantity of blood in the limbs during sleep. The course of change in the degree of this dilatation is important. From the onset of sleep the dilatation increases quite steadily until the maximum is reached somewhere in the second hour, after which, with some variations, the degree of dilatation remains fairly constant for a period and then slowly declines to the time of waking, when it is practically the same as before the sleep began. Sensory stimuli during sleep, which are insufficient to awake the subject, produce marked diminutions in the size of the limb studied, as though the reaction were temporarily in the direction of consciousness. What these changes may indicate concerning the condition of the circulation in the brain during sleep is uncertain. For a very long time there has been accumulating a mass of conflicting evidence on this point. Shepard² in a most careful piece of work concluded that the volume of the brain in sleep is markedly increased, which is quite contrary to the older studies, so many of which had indicated a reduced volume of the brain in sleep.

¹ Brush, C. E. and Fayerweather, R., "Observations on the changes in blood pressure during sleep," *Amer. J. Physiol.*, 1901, 5, 199-210. Blankenhorn, M. A. and Campbell, H. E., "The effect of sleep on blood pressure," *Amer. J. Physiol.*, 1925, 74, 115-120.

² Shepard, J. F., *The Circulation and Sleep*. Univ. of Michigan Pub., 1914. Pp. 83.

Apparently it is not yet certain whether the blood supply in the brain is actually increased or decreased in sleep relative to the body as a whole.

Studies of sleep made with the so-called psychogalvanic reflex, which is probably better designated as variation in electrical skin resistance, have not yet revealed any change which can be definitely presented as characteristic of sleep. Variations do appear which are presumably related to the functioning of the autonomic system, but their specific relationship to sleep is not yet clear.¹

“Depth of Sleep” Studies. Based on the popular assumption that individual instances of sleep may be very light or shallow, very heavy or deep, or of any possible gradation in between, the earlier studies of sleep were frequently designed to measure this so-called depth. It was further assumed that the depth could be measured in terms of the strength of a sensory stimulus necessary to bring the subject to what was considered a waking state. Sometimes the stimulus used was a ball of a known weight falling through a measured distance upon some hard substance. Again, the stimulus was in the form of an esthesiometer applied to the forehead, the strength of the stimulus being increased up to the point called waking. Cutaneous electrical stimuli were also used. Obviously these could not be frequently repeated in any one night, and so, many nights were necessary.

In spite of the crudities of the method and the difficulties confronted, the results of these studies expressed as curves supposed to represent the course of the depth of sleep in a normal sleep period presented a fair degree of agreement. The greatest so-called depth appeared to be reached in the second hour of the sleep period, after which the sleep was progressively more and more shallow up to the point of waking.

¹ Landis, C., “Electrical phenomena of the body during sleep,” *Amer. J. Physiol.*, 1927, 81, 6-19. Forbes, T. W. and Piotrowski, Z. A., “Electrical skin resistance of catatonics during sleep,” *Psychiatric Quart.*, 1934, 8, 722-726

As this came into general acceptance as the normal course of sleep, questions were raised concerning the relative recuperative values of the different portions of the sleep period. It was even suggested that it might be better to be aroused at the end of each two hours of sleep in order that we might again fall into the greater depth of sleep. This obviously implied that the amount of recuperation was proportionate to the depth of the sleep. Weygandt,¹ however, answered this in part by demonstrating that, while short periods of sleep might be sufficient for the recuperation of the functions involved in such simple processes as adding, for the more complex activities of learning longer periods produced the greater improvement.

But these earlier studies of the depth of sleep are now thought to have been based upon an assumption that is untenable. They appear to have been made in terms of a notion that sleep was a general condition of the body or of the central nervous system which might vary in its profundity, much as the degree of alcoholic intoxication is thought of as varying with the degree of alcohol concentration in the blood and as the degree of anesthesia varies with the amount of ether inhaled. And there was the corollary assumption that the degree of sleep so considered could be determined by the strength of some sensory stimulus necessary to disturb it, that stimulation through one sensory path was as good as another for such experimental purposes. Subsequent studies have, however, revealed that all of these assumptions are dubious if not wholly fallacious. Sleep is apparently not a general condition of the central nervous system of equal degree throughout and thus equally measurable through any sensory receptor and tract. Quite the reverse appears to be nearer the truth.

Certainly some portions of the central nervous system are never so much affected by sleep as are others. Movements are of frequent occurrence in sleep. While heart action and respira-

¹ Weygandt, W., "Experimentelle Beiträge zur Psychologie des Schlafes," *Zeit. f. Psychol. u. Physiol. der Sinnes*, 1905, 39, 1-41.

tion undergo some change in sleep they do not cease to function. Persons may talk in their sleep, indicating the functional activity of certain cortical areas, and still be very difficult of arousal. Where people are forced for one reason or another to go for long periods with little or no sleep, the result is not a general reduction of all functions but what appears to be a condition of partial sleep, of sleep in some areas or functional patterns and not in others. And the normal course of going to sleep appears to partake more of the nature of an irregular spreading of some change than it does of a general progress into some degree of depth of sleep. It seems more likely that sleep must be thought of as a very complicated integration of functions and of functional changes. From such a point of view measurement in terms of the strength of a stimulus necessary to produce response in a person who is supposed to be asleep cannot be accepted as measuring the depth of sleep. It could scarcely be thought of as measuring little more than a change of threshold in that sensory field.¹

Studies of Motility in Sleep. One reaction from the defects of the studies of sleep depth has been the development of research on the amount and frequency and nature of movements during sleep. Apparatus has been devised for the automatic recording of these movements along with time records and also for the making of photographic records of the movements themselves. Many have been not a little surprised by the discovery that the normal healthy sleeper makes as many as twenty to forty-five or even more movements in a good night's sleep, and that these are fairly large movements or changes of bodily position.

Apparently these movements are aroused by peripheral stimuli and have the effect of relieving discomfort or conditions

¹ For reviews with criticisms of these earlier studies of sleep see the following: Johnson, H. M. and Swan, T. H., "Sleep," *Psychol. Bull.*, 1930, 27, 1-39. Landis, C., "Electrical phenomena of the body during sleep," *Amer. J. Physiol.*, 1927, 81, 6-19. Swan, T. H., "A note on Kohlschütter's curve of the 'depth of sleep,'" *Psychol. Bull.*, 1929, 26, 607-610.

which might become uncomfortable. It is thought that the movements are stimulated by the high temperature developing over those areas which lie against the bed, from the pressure of tissues restricting blood supply in certain areas, and through the local accumulation of body fluids. It is possible that contractions of the stomach may also be effective.¹

Interestingly enough these studies of movement in sleep do result in curves of sleep motility which correspond remarkably well with the old curves on the depth of sleep.² Many of the curves indicate a period of least movement at about the end of the first hour of the sleep period. Other studies merely indicate that there is the least amount of movement in the earlier part of the course of sleep. Then, in most of the curves, the amount of movement becomes progressively greater as the end is approached. But there are large individual differences. Instances are reported where the point of least movement is not reached until the third or fourth hour of sleep; and Johnson, who has done the most work in this field, expresses the opinion that such a displacement of the point of least motility is characteristic of persons who are addicted to worry and that it appears also in some of the functional neuroses.

While this method gives promise of being highly productive in the study of sleep abnormalities, only exploratory work in this direction has yet appeared. Apparently abnormal conditions may operate either to increase or to decrease the amount of movement in sleep. Emotional disturbance apparently produces more movement than is normal. Loss of sleep and some drugs appear to have the effect of reducing sleep motility. Persons afflicted with tuberculosis and with influenza have been found to move less than is normal and with improvement

¹ Wada, Tomi, "An experimental study of hunger," *Archives of Psychol.*, 1922, No. 57. Pp. 65.

² A study of nervous stability also points to this point in the sleep period as one of significance. In this study instability was found to rise up to the second hour of sleep and to decline thereafter. Omwake, K. T., "Effect of varying periods of sleep on nervous stability," *J. Appl. Psychol.*, 1932, 16, 623-643.

of their physical condition the amount of movement in sleep again approximated the normal.¹

Studies of eye movements show quite definitely certain changes associated with sleep. With fatigue and the onset of sleep, the eye movements become slower and less precise. When photographed, they show the change to a rolling movement; fixation becomes less exact, wavers, and finally disappears. It may be of considerable theoretical importance that eye movements, although affected by the onset of sleep, nevertheless continue after the visual centers appear to have ceased to function in response to retinal stimulation. Apparently the sleep condition spreads from one area to another.²

Amount of Sleep. There is much individual difference in the length of sleep periods. Apparently a very large percentage of people sleep on the average about eight hours a night. In addition some adults, apparently normal in every way, sleep for a short time immediately following the noon meal. From this average there are wide variations. Some people get on quite comfortably on very few hours of sleep while others sleep nine, ten or even twelve hours. Infants normally sleep a very large part of the twenty-four hours. The amount of sleep required declines slowly to somewhere in adolescence. The hygienist interested in prescription finds little data for sweeping generalizations. The amount of sleep must be adapted to the individual and the individual needs. Terman failed to find any correlation between the amount of sleep and excellence of

¹ Boynton, M. A. and Goodenough, F. L., "The posture of nursery school children during sleep," *Amer. J. Psychol.*, 1930, 42, 270-278. Johnson, H. M., "Sleep," (Reading 23, pages 241-291 of W. L. Valentine's *Readings in Experimental Psychology*.) Kleitman, N., Cooperman, N. R. and Mullin, F. J., "Studies on the physiology of sleep. IX. Motility and body temperature during sleep," *Amer. J. Physiol.*, 1933, 105, 574-584. Marquis, D. P., "A study of activity and posture in infants' sleep," *J. Genet. Psychol.*, 1933, 42, 51-69. Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Pp. 242.

² Miles, W. R., "Sleeping with your eyes open," *Scient. Amer.*, 1929, 140, 489-492; "Horizontal eye movements at the onset of sleep," *Psychol. Rev.*, 1929, 36, 122-141. Miles, W. R. and Laslett, H. R., "Eye movement and visual fixation during profound sleepiness," *Psychol. Rev.*, 1931, 38, 1-13.

which might become uncomfortable. It is thought that the movements are stimulated by the high temperature developing over those areas which lie against the bed, from the pressure of tissues restricting blood supply in certain areas, and through the local accumulation of body fluids. It is possible that contractions of the stomach may also be effective.¹

Interestingly enough these studies of movement in sleep do result in curves of sleep motility which correspond remarkably well with the old curves on the depth of sleep.² Many of the curves indicate a period of least movement at about the end of the first hour of the sleep period. Other studies merely indicate that there is the least amount of movement in the earlier part of the course of sleep. Then, in most of the curves, the amount of movement becomes progressively greater as the end is approached. But there are large individual differences. Instances are reported where the point of least movement is not reached until the third or fourth hour of sleep; and Johnson, who has done the most work in this field, expresses the opinion that such a displacement of the point of least motility is characteristic of persons who are addicted to worry and that it appears also in some of the functional neuroses.

While this method gives promise of being highly productive in the study of sleep abnormalities, only exploratory work in this direction has yet appeared. Apparently abnormal conditions may operate either to increase or to decrease the amount of movement in sleep. Emotional disturbance apparently produces more movement than is normal. Loss of sleep and some drugs appear to have the effect of reducing sleep motility. Persons afflicted with tuberculosis and with influenza have been found to move less than is normal and with improvement

¹ Wada, Tomi, "An experimental study of hunger," *Archives of Psychol.*, 1922, No. 57. Pp. 65.

² A study of nervous stability also points to this point in the sleep period as one of significance. In this study instability was found to rise up to the second hour of sleep and to decline thereafter. Omwake, K. T., "Effect of varying periods of sleep on nervous stability," *J. Appl. Psychol.*, 1932, 16, 623-643.

of their physical condition the amount of movement in sleep again approximated the normal.¹

Studies of eye movements show quite definitely certain changes associated with sleep. With fatigue and the onset of sleep, the eye movements become slower and less precise. When photographed, they show the change to a rolling movement; fixation becomes less exact, wavers, and finally disappears. It may be of considerable theoretical importance that eye movements, although affected by the onset of sleep, nevertheless continue after the visual centers appear to have ceased to function in response to retinal stimulation. Apparently the sleep condition spreads from one area to another.²

Amount of Sleep. There is much individual difference in the length of sleep periods. Apparently a very large percentage of people sleep on the average about eight hours a night. In addition some adults, apparently normal in every way, sleep for a short time immediately following the noon meal. From this average there are wide variations. Some people get on quite comfortably on very few hours of sleep while others sleep nine, ten or even twelve hours. Infants normally sleep a very large part of the twenty-four hours. The amount of sleep required declines slowly to somewhere in adolescence. The hygienist interested in prescription finds little data for sweeping generalizations. The amount of sleep must be adapted to the individual and the individual needs. Terman failed to find any correlation between the amount of sleep and excellence of

¹ Boynton, M. A. and Goodenough, F. L., "The posture of nursery school children during sleep," *Amer. J. Psychol.*, 1930, 42, 270-278. Johnson, H. M., "Sleep." (Reading 23, pages 241-291 of W. L. Valentine's *Readings in Experimental Psychology*.) Kleitman, N., Cooperman, N. R. and Mullin, F. J., "Studies on the physiology of sleep. IX. Motility and body temperature during sleep," *Amer. J. Physiol.*, 1933, 105, 574-584. Marquis, D. P., "A study of activity and posture in infants' sleep," *J. Genet. Psychol.*, 1933, 42, 51-69. Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Pp. 242.

² Miles, W. R., "Sleeping with your eyes open," *Scient. Amer.*, 1929, 140, 489-492; "Horizontal eye movements at the onset of sleep," *Psychol. Rev.*, 1929, 36, 122-141. Miles, W. R. and Laslett, H. R., "Eye movement and visual fixation during profound sleepiness," *Psychol. Rev.*, 1931, 38, 1-13.

school work in an unselected group of school children but did find that his group of gifted children slept more on the average than the unselected. Apparently the quality of sleep is of as great importance to recuperation as is the quantity, possibly of greater importance.¹

Partial Sleep. This is sometimes referred to as "sleeping with one eye open." Ordinarily this very common phenomenon is probably not to be considered as abnormal, although as it becomes more and more complicated it may result in abnormal conditions. The ordinary form is that exemplified by the nurse who sleeps soundly but goes to sleep prepared to awake upon a given signal, or upon the slightest move or call from her patient. Other stimuli than the prepared-for one may be very strong but without disturbing the sleep, and yet the sleeper will awaken promptly upon the appearance of the prepared-for stimulus. Apparently as the consequence of much practice such people are able to go into the sleep state wherein most sensory thresholds are raised, leaving the threshold to one comparatively simple pattern at its normal waking level. When that threshold is crossed the pattern activated is such as to bring about the shift from the sleeping state to the waking.

Those individuals who claim to be human alarm clocks are doubtless reacting in some such manner as this. They go to sleep with some simple pattern retaining its normal waking threshold, and that is responsive to a certain strike of the clock, light condition, or what not. When the stimulus comes the sleeper awakes. The ability to do this is greatly exaggerated. Often it is nothing more than the habit of awakening at about

¹ Foster, J. C., Goodenough, F. L. and Anderson, J. E., "The sleep of young children," *J. Genet. Psychol.*, 1928, 35, 201-218. Giddings, G., "Normal sleep patterns for children," *J. Amer. Med. Asso.*, 1934, 102, 525-529. Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Pp. 242. Terman, L. M. and Hocking, A., "The sleep of school children, its distribution according to age and its relation to physical and mental efficiency," *J. Educ. Psychol.*, 1913, 4, 138-147. Wagner, M. A., "Day and night sleep in a group of young orphanage children," *J. Genet. Psychol.*, 1933, 42, 442-459.

a certain time. Again the familiar remembering of the positive cases and forgetting of all failures helps to enlarge the stories told. Such phenomena, when they occur, can be explained without resorting to the assumption of a subconscious self which sits on guard while the conscious self sleeps. Attempts to experiment with people who claimed to be able to awake at any set time have resulted in some of the subjects awaking so frequently as to put a stop to their part of the experiment, while others have demonstrated a remarkable ability to support their claims.¹

If this going to sleep with certain thresholds left low is complicated to the point where a subject tries to sleep with many thresholds low, so as to be responsive to too many stimuli, then sleep becomes uneasy and much disturbed. Then the condition rapidly approaches insomnia.²

Theories of Normal Sleep. There has been in recent years a marked revival of interest in the experimental study of sleep with the inevitable consequence that our interpretations are changing rapidly. Theories which but a few years ago were widely accepted or favored are now matters of history. But here, as is so often the case in the growth of knowledge, many of the theories were based upon certain facts that are still good as facts although the theoretical constructs are now known to have been limited by the overemphasis upon certain aspects of the whole process. In order to understand current thinking, however, it is quite necessary to know something of these older theories. They must therefore be included briefly.

1. *Circulatory theories.* These were based upon the evidence of changes in the circulation of the blood in sleep. Many

¹ Brush, E. N., "Observations on the temporal judgment during sleep," *Amer. J. Psychol.*, 1930, 42, 408-411. Omwake, K. T. and Loran, M., "Study of ability to wake at a specified time," *J. Appl. Psychol.*, 1933, 17, 468-474.

² A highly interesting possibility is that in all of these cases the preparation for waking may bring about a dream which arouses the subject. See Bond, N. B., "The psychology of waking," *J. Abn. & Soc. Psychol.*, 1929, 24, 226-230.

thought that the evidence indicated a brain anemia, although this was actively contested. The most typical form of circulatory theory assumed that sensory excitations resulted in the stimulation not only of the appropriate cortical areas but also of the vasomotor center in the medulla. The excitation of this center causes a constriction of the blood vessels of the body, especially of the skin, and therefore an adequate blood flow through the brain is maintained. But with continued stimulation this vasomotor center of the medulla becomes fatigued and eventually unable to maintain the constriction of the blood vessels of the body. With this relaxation there would follow an increased flow of blood to the body and a reduced flow through the brain. The result of such a change, it was assumed, would be sleep.

This interpretation was thought to be supported also by certain common practices. While we do not ordinarily wait until fatigue drives us into sleep, we have learned better, nevertheless when we retire we shut off as much as possible of what would serve as sensory stimuli in order to permit the vasomotor center every opportunity to relax and let us go to sleep. If we desire to arouse a person before the normal recuperation of the vasomotor center results in waking, we know that such can be done by a more or less violent stimulation of the sensory receptors of the sleeper. If shaking and shouting are ineffective, a bucket of cold water will be.

2. *Neurological or histological theories.* Certain demonstrable changes in the nerve cells of the central nervous system after prolonged stimulation have long been known. The existence of these changes led to theorization in such terms for the explanation of sleep. It was suggested that the dendrites of the neurones still retain some of the ancient amœboid contractility and after prolonged stimulation contract, thereby breaking the synaptic connections. If there were any certain evidence that such contractions take place, then there would doubtless have been greater use made of this theory; but the

evidence for it is highly uncertain. In fact, the make and break theory of the synapse upon which this depends has been very generally discarded.

Others suggested the possibility of there being within the central nervous system a special pattern or system for the production and control of sleep.¹ This was supposed by Piéron to be activated by that substance appearing in the blood which he had termed hypnotoxine. Johnson elaborated the notion ingeniously. He suggested that there might be all through the various levels of the central nervous system a set of neurones specialized for the sleep function. When this system was activated, it could be thought of as drawing off into itself excitations from the rest of the central nervous system. Then would the sleep system alone be effectively active. Waking was accordingly thought to be attributable to a stimulation of the general system too great for drainage into the sleep system, with the eventual activation of the waking system to a point where it by drainage reduced the sleep system to inactivity.

Pavlov contributed a further modification of these neurological theories by offering evidence in favor of the idea that sleep might be a spread of inhibition throughout the cortical areas. It will be remembered that in his experimental dogs he found that occasionally in a delayed reflex experiment the dog would go to sleep in the period of delay. This Pavlov interpreted as due to a greater spread of inhibition than was desired. There was inhibition in the delay period and for some reason in certain instances this inhibition spread beyond the immediately necessary bounds and produced the sleeping state.² This interpretation has seemed worthy of serious consideration both because it has behind it some experimental evidence and also because it harmonizes with those other facts already mentioned which point to the probability of sleep being some sort of change

¹ Johnson, G. T., "Sleep as a specialized function," *J. Abn. & Soc. Psychol.*, 1923, 18, 88-96. Piéron, H., *Le problème physiologique du sommeil*. Paris, Masson, 1913. Pp. 520.

² Pavlov, I. P., *Conditioned Reflexes*. Oxford, 1927. Chap. XV.

which spreads and which may involve varying amounts and areas of the brain.

The conception of sleep as a condition of cortical inhibition, or of some form of greatly reduced or retarded functioning, is to some extent supported by the discovery that the course of forgetting, the fading of an impression, is greatly retarded by sleep. Apparently the normal processes so familiar to all students of psychology when expressed in the form of the curve of forgetting undergo a profound change if sleep intervenes. While the nature of the change is not yet clear, and the phenomena are subject to a number of different possible interpretations, it is well to observe the possibility of such experimental work supporting the interpretation of sleep as a spread of inhibition.¹

3. *Chemical theories.* Many people have thought that sleep was a kind of poisoning and have therefore sought for substances which might by their toxic effect be the cause of sleep. Piéron points to his hypnotoxine. Some physiologists have been much taken with Pflüger's suggestion that the brain cells in waking activity consume their supply of oxygen more rapidly than the circulation can restore it. This would reduce the irritability of the nerve cells and hence sleep, during which the oxygen supply would be restored. Salmon² attributed sleep to the secretions of the endocrine system. And, of course, the general products of metabolism, lactic acid and carbon dioxide, as well as Weichardt's alleged kenotoxin, have been pointed to as probable causes. Sleep seems, however, to be something more than a poisoning. The sleeping person does not behave as one poisoned. And then, too, if sleep comes on at the point where the poisoning just cancels the waking activity, then the individual should awake at least partially as soon as the amount of the poison is again reduced below the critical point. If by

¹ Van Ormer, E. B., "Retention after intervals of sleep and waking," *Arch. of Psychol.*, 1932, No. 137; "Sleep and retention," *Psychol. Bull.*, 1933, 30, 415-439.

² Salmon, A., *La fonction du sommeil*. Paris, Vigot, 1910. Pp. 235.

such means we were forced into sleep at eleven-thirty we ought to be waking again at twelve, which obviously does not conform to the facts.

4. *Psycho-biological theories.* The outstanding figure in this group is Claparède.¹ He has suggested that sleep can best be thought of as an instinct that serves to prevent the harmful effects of exhaustion. We sleep to prevent undue fatigue not because of fatigue. All of the established facts concerning the chemical conditions of the body in sleep and the circulatory changes are but incidents in the process. Like other instincts this could have been acquired by variation and survival. Those members or variants of the species which rested periodically survived while the others were killed off in the struggle for existence. Consequently we come of that line which has survived by the tendency to sleep regularly. Burnham² happily points out that going to sleep is a form of behavior much like that of the instincts. We do not will to sleep any more than we will to be angry or will to be afraid; but just as we are overcome by, or give up to, anger or fear so we are overcome by, or give up to, sleep. The sleep response can be conditioned exactly as other instincts are conditioned. Most normal adults go to sleep when the proper pattern of stimuli are present, and these are not the stimuli which originally produced sleep in them but have come to be effective by gradual substitution in the familiar manner of the Pavlovian experiments. So, too, many people are wholly dependent upon the presence of a certain pattern of pressure and kinesthetic stimuli to produce sleep; without them they sleep poorly if at all.

A few years after Claparède's article appeared Boris Sidis³ published an experimental study of sleep in which he came to

¹ Claparède, E., "Esquisse d'une théorie biologique du sommeil," *Arch. de psychol.*, 1905, 4, 245-349; "Théorie biologique du sommeil et de l'hystérie," *Arch. de psychol.*, 1928, 21, 113-174.

² Burnham, W. H., "The hygiene of sleep," *Ped. Sem.*, 1920, 27, 1-35.

³ Sidis, Boris, "An experimental study of sleep," *J. Abn. Psychol.*, 1908, 3, 1-32, 63-96, 170-207.

the conclusion that sleep was an instinctively produced condition developed out of an hypnoidal or intermediary state phylogenetically far older than sleep. On this he placed much emphasis. The hypnoidal or sub-waking state was considered to be a remnant present in our life today of the resting state found in the lower forms of animal life. This is neither like our sleep nor like our waking, but is that condition of relaxed motionless tranquillity so often observed in lower animals. Out of this there have evolved two forms or states, sleep and hypnosis. According to Sidis human beings pass first into the hypnoidal state and from that, according to the conditions prevailing, either into sleep or into hypnosis. The situation which carries the human being through the hypnoidal state into normal sleep is composed of all that which limits voluntary movement and which at the same time produces monotony of sensory stimulation.

From another series of experiments Coriat¹ came also to the conclusion that sleep must be an instinct; but for its activation he found that the originally effective stimulus was muscular relaxation. Contrary to the conclusions of Sidis, however, he found that monotonous stimuli, if sufficiently strong to be above the limen, would keep the subject awake instead of putting him to sleep; in fact, fatigue served to keep subjects awake. The essential feature, Coriat concluded, for the production of sleep was the cessation of sensory stimulation, and as muscular activity produces such a vast proportion of the stimuli constantly battering at the doors of the organism he concluded that sleep came with the achievement of muscular relaxation. He was able to put fully rested subjects asleep by producing complete relaxation, whereas muscular tension aroused or kept awake.

Woolbert² followed out this muscular relaxation theory in terms of a complete behavioristic psychology. He argued that

¹ Coriat, I., "The nature of sleep," *J. Abn. Psychol.*, 1908, 3, 1-32.

² Woolbert, C. H., "A behavioristic account of sleep," *Psychol. Rev.*, 1920, 27, 420-428.

all higher mental processes are finer and newer stimulus-response patterns. Sleep in such terms is a progressive relaxation, at first of the finer or higher or newer muscle co-ordinations, while the depth or extent of sleep would depend upon how far down the scale the relaxation spread.

The psychoanalysts have also made some suggestions concerning the nature of sleep and of course in terms of their now familiar system. For them sleep is essentially an escape mechanism, which involves a regression to an older, more primitive or infantile state. That sleep is in some cases resorted to as an escape from the realities or problems of life can easily be demonstrated especially in cases where the amount of sleep is abnormal. That sleep is a regression would be more difficult to defend, especially in the light of Sidis' work on the hypnoidal state.

In a justly famous study of trephined subjects, Shepard¹ concluded that there must be a vasomotor control of the cerebral circulation quite like that of the body in general, and that the circulatory changes taking place in the brain correspond to those in the body. That the brain vessels relax on going to sleep and constrict on awakening as do those of the limbs of the body is a conclusion so strikingly different from the immediately preceding physiological studies as to provoke considerable theorizing. Shepard also found that the brain changes followed rather than preceded the change we know as going to sleep. He proposed that sleep is a gradual and eventually complete domination of attention and of all consciousness by fatigue from the various parts of the body. That we go to sleep somewhat slowly and do not reach the greatest depth for an hour or more would then be but the slowness with which the fatigue sensations come to a complete and exclusive dominance. In the deepest sleep, consciousness as we experience it when awake would be entirely displaced by fatigue sensations. As

¹ Shepard, J. F., *The Circulation and Sleep*. Univ. of Michigan Pub. 1914. Pp. 83.

the recuperative processes of the body remove the fatigue stimuli, sleep would become more and more shallow, and this corresponds to the sleep curve. Also, sleep would be more easily disturbed by dreams and in the chapter on dreams it will be learned that dreams are more frequent in the shallower portions of the sleep period.

Fascinating as this theory is, certain difficulties must be recognized. The similarity to hypnosis and other states of abstraction is obvious; in fact, according to this theory, going to sleep would be a sort of self-hypnosis with fatigue sensations as the point of fixation. But, it has been demonstrated that most states of hypnosis are in certain important features different from sleep. That many people do go to sleep by permitting fatigue sensations to dominate consciousness is clearly admissible. But as the end result, the sleep condition is ordinarily so different from hypnosis it must be that the domination by fatigue sensations is but a step in the process of going to sleep and not the whole story. Thoroughly rested persons can also go to sleep, while an excess of fatigue often prevents sleep.

Discovery of a "Sleep Center." It now seems quite certain that there are places in the region of the third ventricle of the cerebrum which are peculiarly involved in the production of both sleep and insomnia. Research on cases of encephalitis lethargica first pointed to this probability. This disease, it will be recalled, often manifests a change of bodily condition into what is either sleep or what in its general features closely resembles sleep. Post-mortem studies frequently revealed lesions in the posterior region of the floor and walls of the third ventricle. The inference was inevitable that this was a region so intimately involved in the production of sleep that it could properly be referred to as a sleep center. And there were indications also of closely related areas wherein lesions caused insomnia.

Then came the report of the brilliant experimental work of

Hess¹ on the sleep behavior of cats. He succeeded in sinking slender electrodes through the brain tissue so that their effective points penetrated these critical areas in the walls of the third ventricle. Electrical stimulation of these areas was then possible. When so stimulated the cats went to sleep; and it is said that their behavior, both in going to sleep and in waking from it, was remarkably like that of a healthy unoperated cat. The electrodes which Hess used were not all in exactly the same place which indicates that one must not think of the so-called sleep center as being a spot or organ. Hess warns especially against this. It is his contention only that in this area the patterns for the many different functions involved in the production of sleep lie so near together that it is possible to stimulate them experimentally. He also reports that sometimes his electrodes failed to touch these critical patterns and then they stimulated activity instead of sleep.²

Summary of Sleep Theory. A review of the preceding presentation of the many different suggestions for the interpretation of sleep must make the fact very clear that we do not yet know what sleep is and that those who have sought to present a comprehensive theory have frequently been so impressed by some one aspect of sleep that its other aspects were neglected. There is enough evidence in support of most of these attempts at interpretation to justify the acceptance of the essential features of most of them. But this will force one immediately to think of sleep as a highly complex change in the pattern of bodily functioning. It may and probably does involve much reduction in motility, a spread of cortical inhibition, significant shifts in the distribution of the blood, changes in the blood chemistry, and an increase or decrease in the functioning of

¹ Hess, W. R., "Le sommeil." *Comtes rendus de la société de biologie*, 1931, 107, 1333-1364.

² See also Hess, W. R., "The autonomic nervous system," *Lancet*, 1932, 223, 1190-1201, 1259-1261. Nachmansohn, D., "Zur Frage des Schlafzentrums," *Zsch. f. d. ges. Neur. u. Psychiat.*, 1927, 107, 342-401. (Includes bibliography of 75 titles.)

certain centers or areas in the diencephalon. And there may be certain accompanying changes in the electrical resistance of the skin, which may point in turn to large changes in the autonomic system. Perhaps it may all be wisely thought of as comparable to an instinct. But certainly sleep must be thought of as highly complex.

This immediately raises the possibility of there being many different states all of which are now crudely designated as sleep. Is encephalitic sleep the same as normal sleep? Is the state called a nap the same as that of nocturnal sleep? Are the uncontrollable fits of sleep now referred to as narcolepsy (see page 313) the same as normal sleep? All these are open questions; and many similar ones could be raised. While these questions cannot at present be answered, just because there is sufficient reason for raising such questions it is necessary for one to be very cautious in thinking not only about the nature of sleep in general but also, and especially, when thinking about peculiar and unusual sleep states or sleep behavior.

Abnormalities of Sleep. Of these there are many. Of some of them we know a little; of others we know scarcely anything beyond the fact of their existence. They must be considered in some detail but it should be kept in mind that the purpose of this text is to present primarily the psychological features and the phenomena which involve a psychogenesis.

1. *Effects of loss of sleep.* A famous study of this was made many years ago by Gilbert and Patrick¹ to which all subsequent studies respectfully refer. They kept their subjects awake for ninety hours. Toward the end of the fast the subjects were permitted to do anything which would keep them awake, at least keep them going in a condition of apparent wakefulness. Hallucinations of sight were reported and a great reduction of memory capacity because of the inability to hold attention on a task. The most surprising result of this study was the dis-

¹ Gilbert, J. A. and Patrick, G. T. W., "On the effects of loss of sleep," *Psychol. Rev.*, 1896, 3, 469-483.

covery that at the conclusion of the sleep fast the subjects fully recovered with but 35 per cent or less of the sleep lost. The explanation of this usually offered is that the amount of sleep lost is erroneously calculated by summing up the hours an individual subject would have slept but for the interference of the experiment. Actually the subjects were far from being fully awake during the entire period of the experiment. During the latter portions of it the subjects may have been one-half asleep or even more so, although they did keep going.

Subsequent studies¹ of a similar nature have revealed that mental tests such as tapping, aiming, reading letters and mental multiplication do not indicate definitely any effect from the loss of even two nights of sleep. The changes in such tests from day to day are as great or greater than those appearing at the time of sleep losses, which shows that the latter are not of significance. From such studies it must not be concluded, however, that the loss of a couple of nights of sleep has no effect. On the contrary, the subjects regularly report visual hallucinations, emotional instability, increased irritability, headaches, nervousness, sometimes speech disturbances and often a dazed condition. When tested such subjects apparently "shake themselves out of it" and apply themselves with an effort that compensates for the actual effects of the loss of sleep. This is to be interpreted rather as a failure of the psychologist's ability to test, rather than a failure to find any serious effects of the loss of sleep. The nature of these effects is a matter of common experience and corresponds well with the summary of reports from experimental subjects listed above. That human beings can compensate for such effects of the loss of sleep, even though the compensation be but temporary, is in itself an important observation.

A study of muscular tension throws some light on the nature of this compensation. In this experiment there was indicated

¹ See especially the studies by Robinson and his associates reported in the *Journal of Experimental Psychology*, 1922.

after a sleep loss that while the efficiency remained at the same level the muscular tonus was increased. And, when the loss of sleep was increased, the effects of the loss apparently were cumulative because they eventually showed signs of destroying that increased tonus which served at first to compensate. Perhaps this may represent what would happen with any form of compensation for sleep loss if it were pushed too hard. It has also been shown that the effects of sleep loss, in children at least, can be measured by changes of motility through several succeeding nights.¹

2. *Insomnia.* Students who are primarily interested in the functional forms of abnormality must not fail to recognize in sleep disturbances the possibility of being confronted by purely organic phenomena. Many instances of insomnia and abnormal wakefulness can be traced directly to toxic, inflammatory, depleted, degenerative or other conditions of the body and thus, except as the insomnias they produce may affect associated behavior, are strictly speaking outside the field of psychology.

Boils, ulcers, decayed teeth, wounds, or lesions of any sort that stimulate pain may be causes of abnormal wakefulness and loss of sleep. Extreme fatigue can prevent or disturb sleep either through the direct effects of the fatigue toxins upon the cerebral cortex or through the continued tension of skeletal muscles which prevent sleep by the continual bombardment with kinesthetic excitations. The necessary relaxation comes slowly if at all. Any toxic condition may produce an over-excitability of the cerebral cortex. In cases of debility and old age where nutrition is poor, or where too long an interval has elapsed between eating and the attempt to go to sleep, the dis-

¹ Freeman, G. L., "Compensatory reinforcements of muscular tension subsequent to sleep loss," *J. Exper. Psychol.*, 1932, 15, 267-283. Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Page 183 et seq. Leake, C., Grab, J. A. and Senn, M. J., "Symptomatology in rabbits of exhaustion and lack of sleep," *Amer. J. Physiol.*, 1927, 82, 127-130.

turbance is likely to take the form of waking after a short period of sleep and then being unable to go to sleep again.

There are also many possibilities of organically produced insomnias through lesions of the so-called sleep center or area around the third ventricle. A lesion of those centers which Hess found to be sleep-producing might have the effect of making sleep impossible; and a lesion of the centers which when stimulated produce wakefulness might produce the same effect by keeping the person constantly awake. It is of course equally possible that there might be effects exactly the reverse of these, and this will be mentioned again below in the discussion of abnormal tendencies to sleep. That such lesions of these areas do exist has been well demonstrated by the studies of encephalitis and its sequelae. What percentage of insomnias can be so explained still remains, however, an unsolved problem; but it may be fairly large.

Very frequently disturbed sleep is due to the absence of familiar stimuli, and the correlative presence of unfamiliar stimuli. Herein is the essential difference between most so-called good sleepers and poor sleepers. The good sleeper can go to sleep anywhere, on the best coil-spring bed or on a board, no matter what the pattern of stimuli may be. The poor sleeper is conditioned to a certain pattern of sensory stimuli and without that pattern sleep is difficult. Some individuals can go to sleep in a certain position only, and if circumstances prevent the achievement of that position sleep does not come. The best sleeper perhaps has his sleep reaction conditioned not to a pattern of sensory stimuli but to certain images brought up by a certain attitude associatively aroused. For him the external situation is of little importance.

Insomnia is commonly recorded in the histories of both psychotic and psychoneurotic cases shortly prior to hospital admission. The intellectual and emotional disturbances of the diseased condition are supplemented by the irritating environment to which the individual is incapable of making normal ad-

justment. The combination results in so much emotional disturbance as to prevent sleep. Much insomnia is undoubtedly of this general nature. People cannot sleep perhaps because they have a fear of sleep, a phobia for sleep. The interpretation of such cases must, then, involve the psychology of the psychoneuroses already discussed.¹ "Shell shocked" soldiers often had their sleep so disturbed by hideous dreams that they preferred to remain awake and actually fought to keep awake. Domestic and business troubles which result in conflicts and the constant effort to keep the disagreeable out of the waking consciousness may also force the individual to be constantly on guard against any relaxation which would give the disagreeable a chance. Under such circumstances sleep is nearly impossible. Such people may say that they want to sleep and worry about the loss of sleep, but at the same time be actually fighting against it. McDougall² rightly emphasizes peace of mind as an essential preliminary to sleep.³

3. *Night terrors.* Awakening in a state of terror is an experience most people can recall. Explanations vary with particular cases, although many can be subsumed under the general principle of the conditioned response. A child frightened by thunderstorms accompanied by flapping window curtains may thereafter have the fear mechanism actively aroused by a flapping window curtain without the thunderstorm. A little breeze subsequently flaps the curtain and the child awakes in terror and to the distress of the parents. Of such conditioned fear reactions there may be many kinds. Some very speculative minds have suggested that the fears in the sleep of children

¹ See chaps. V and VI.

² McDougall, Wm., *Outline of Abnormal Psychology*, page 77.

³ Good presentations of insomnia and its problems can be found in the following: (Anon.), Sleep. *Lancet*, 1927, 213, 343. Callender, E. M., "Insomnia," *Lancet*, 1927, 213, 1280-1283. MacCurdy, J. T., "The psychology and treatment of insomnia in fatigue and allied states," *J. Abn. Psychol.*, 1920-21, 15, 45-54. Symonds, C. P., "Sleep and sleeplessness," *Brit. Med. J.*, 1925, 1, 869-871. Worster-Drought, C., "The treatment of insomnia," I. "General considerations," *Lancet*, 1927, 213, 720-721; II. "Therapeutic measures," *Lancet*, 1927, 213, 767-768.

were in the nature of reverberations of ancient racial fears, which could come to consciousness only in the state of psychic decapitation called sleep. But such is an unnecessarily fanciful notion. Bad dreams stimulated directly by the perseveration of the effects of bloodcurdling stories read or heard shortly before going to bed may also account for some night terrors.

Still other disagreeable dreams, resulting in terrors, may be of the psychoneurotic type, involving a simple maladjustment and repression. Such are more complicated and involve the whole psychology of dream life.

Rather unsuccessful efforts have been made to distinguish between nightmares and night terrors. To say that one is merely a terrifying dream and that the other involves visual hallucinations is scarcely a clear distinction for those who know the predominantly visual and hallucinatory nature of all dreams. Perhaps it would be wiser to think of the difference, if it must be considered, as one of degree. Nervous adults as well as children are prone to the experience, although it is far more likely to occur in childhood. Fevers often produce them. So also does any condition of the body which stimulates, as disturbed digestion. Attempts have been made to relate these terror states to epilepsy, chorea and hysteria, but without much certainty of result. Epilepsy, chorea and hysteria all indicate nervous instability of some sort and nervously unstable children are prone to have night terrors, but it cannot be said that the appearance of night terrors is certain evidence of epilepsy, chorea, or hysteria. If they occur with excessive frequency and continue very long, relationship to such disturbances might be suspected. It is always wise in studying the history of nervous instability to investigate the extent and nature of the experience with night terrors.¹

The experience of falling or jumping so violently as to bring waking consciousness seems none too well understood. It is

¹ Shackle, J. W., "A note on night terrors," *Lancet*, 1928, 214, 287-288.
Anderson, J. E., "The dream as a re-conditioning process," *J. Ab. & Soc. Psychol.*, 1927, 22, 21-25.

usually supposed to be related to the physiological changes taking place in the process of going to sleep. Perhaps it may be allied to some epileptic seizures because of the possibility of the jump being due to the relaxation of the higher cerebral control, thereby permitting a sudden discharge in the lower levels. Perhaps the muscular relaxation and changes of respiration and heart action may take place a little too soon or too suddenly, or in some way different from the usual, so as to produce an unusual and rather extensive pattern of sensory stimulation resulting in waking consciousness. Disturbances of this nature may at times be the stimulus for night terrors.

4. *Walking in the sleep.* Much popular literature and tradition has grown up around this phenomenon. The somnambulism of Lady Macbeth has been much discussed and even subjected to psychological study. Wherever sleepwalking occurs it may be accepted as evidence of a disturbed nervous condition, probably of the psychoneurotic variety or at least involving psychoneurotic features. Lady Macbeth suffered serious emotional disturbance because of her deeds and plans. In this respect sleepwalking is allied to the hysterical somnambulisms already discussed. There lie behind it emotional conflicts and repressions which prevent the establishment of the normal sleeping state. The relaxation or partial relaxation of sleep permits the repressed emotions opportunity for partial expression. The classic description of Lady Macbeth going through the movements of washing her hands in the somnambulism to remove the blood stains is a good literary example. The detailed explanation of any given case will be found through the same procedure as that used to analyze an hysterical somnambulism. The presence of sleepwalking, as of hysterical somnambulisms which intrude upon the waking state, indicates the necessity for expert care and re-education. Likewise, if instances of sleepwalking are to be found in any case history under consideration it may be taken as evidence of at least a former period of instability and hence is

usually looked upon as evidence of predisposition to subsequent instability.

5. *Prolonged states of sleep.* These may be either of a functional or an organic nature. In the chapter on hysteria a presentation was made of hysterical states of sleep which have been found to be less like sleep than a casual examination would suggest. Actually the subject of such a prolonged fit of sleep is not at all asleep, but is in a hysterical condition which involves the complete domination of the limited range of consciousness by ideas of sleep or death, which are therefore acted out and result in the condition of immobility. The organically caused states of prolonged sleep, as in encephalitis, do not come within the scope of this book.

Narcolepsies. The term narcolepsy is used indiscriminately for the designation of any form of intruding and inappropriate period of sleep. For a time this was thought to be a form of epilepsy but that notion is now generally abandoned. That there are at least two kinds of narcolepsy seems quite certain. There are fits of sleep which are definitely of organic origin, which are sometimes termed the true narcolepsies; and there are fits of sleep which are definitely functional in nature and are usually referred to as hysterical narcolepsies.

The nature of the true or organic narcolepsies is such that they are coming to be of no little psychological significance. The sleep of one of these seizures appears to be in all respects like normal sleep. But the odd thing about them is their appearance at the most inappropriate times and in the most inconvenient places. Apparently time or place has nothing whatever to do with their onset. They are as likely to appear on the street as in the drawing room, when business is pressing as when there is none. For them there is no aura. The sufferer merely becomes aware that an attack is coming on and no kind of effort is adequate to prevent. Fortunately the duration of these attacks is not great, ranging from a few seconds up to forty minutes. Attacks of longer duration are reported, but

less commonly. Ordinarily it is possible to arouse a person from such sleeps about as easily as from normal sleep and after such an attack the subject feels quite well. There is none of the exhaustion which follows an epileptic seizure. Dreams are occasionally reported.

There is sometimes associated with these narcoleptic seizures another form of seizure, known as cataplectic, which is as curious as it may prove to be instructive. In these cataplectic seizures the subject experiences a loss of muscle tone so complete as to cause a physical collapse to the floor or ground. The duration is short and there is no loss of consciousness. These, like the narcoleptic seizures, occur anywhere at practically any time; but the circumstances which bring them on are those of emotion. Apparently any emotion may cause them, but laughter is most likely to do so. Both narcoleptic and cataplectic seizures may appear in the same patients and there is ample reason for thinking that they are closely related. It has even been contended¹ that the narcolepsies are not sleep at all but a milder form of general loss of muscle tone.

Both of these conditions obviously point to the probability of some cerebral disturbance in the general region of the third ventricle. The adjacent location of centers of control of the bodily changes in emotion to those described as sleep centers makes it not surprising that lesions should affect both. Frequently there is a history of encephalitis; but there are many other disturbances of cerebral functioning which appear to be significant factors in the etiology of both narcolepsy and cataplexy.

That such troubles may be quickly supplemented by purely functional or psychoneurotic troubles must be obvious. The effort to live and to make a living in spite of the interruptions for sleep and these losses of muscle tone must be a very trying one indeed, frequently embarrassing to the extreme. To what extent this may result in the development of escape motiva-

¹ Wilson, S. A. K., "The narcolepsies," *Brain*, 1928, 51, 63-109.

tions, melancholic attitudes, inferiority troubles, complexes, and the like, no one yet knows; but it is reasonable to assume that such developments might be extensive, and thus seriously complicate the original condition.¹

Hysterical narcolepsies resemble greatly the attacks of sleep just described, except that upon careful examination they do not appear to come at times quite so inappropriate. In fact, careful examination is almost certain to reveal that the sleepiness aids in the realization of some desire or wish. The general nature of this desire or wish is that of escape from situations of life which are intensely disagreeable. A child is described who complained of being sleepy and asked to go to bed frequently. Upon being put to bed sleep would follow promptly. Investigation revealed the nature of the troubles the child was getting into; and when they were removed, the abnormal desire for sleep disappeared. An adult, a teacher, is reported who would have an uncontrollable tendency to sleep at the time when he should be going to his school. Expert analysis of the situation revealed the increasing difficulty which the teacher was daily confronting, and which was being in part escaped by the tendency to sleep. Upon analysis and confrontation with the facts a full and complete adjustment to the situation was achieved and the tendency to excessive sleep disappeared. Such a pattern of defensive escape reactions will be recognized at once by readers who are already familiar with the earlier chapters of this book.²

Sleep of the Insane. Of course one would expect to find here most of the abnormalities already mentioned. The disturbed mental conditions of the psychotic produce insomnia; and,

¹ Adie, W. J., "Idiopathic narcolepsy: a disease sui generis; with remarks on the mechanism of sleep," *Brain*, 1926, 49, 257-306. Creak, E. M., "A case of narcolepsy," *Lancet*, 1932, 223, 514-515. Freeman, W., "Pathologic sleep," *J. Amer. Med. Assn.*, 1928, 91, 67-70. Worster-Drought, C., "Narcolepsy," *Brit. J. Psychol., Med. Sec.*, 1923, 3, 267-282. Wortis, S. B. and Kennedy, F., "Narcolepsy," *Amer. J. Psychiat.*, 1933, 12, 939-946.

² See also on hysterical narcolepsies, Janet, P., *The Major Symptoms of Hysteria*, pp. 104-109.

where it involves the features of psychoneurosis, there may be any or all of the other abnormalities mentioned. Manic-depressive cases ordinarily sleep little and that is frequently much disturbed by dreams. Epileptics, to the contrary, sleep easily and soundly for long periods. In their sleep there is occasionally evidence of fitful dreaming, but of these dreams there is little recollection upon waking.

The experimental studies of sleep have not yet included much work on the major forms of abnormality. De Sanctis in his study of the depth of sleep did include some insane patients and in every case he found that the depth of sleep was far greater than for normal persons. These pathological subjects also showed, all through the sleep curve, far more peculiarities than the sleep curve of the normal. They are well worth examination because of this striking difference. The average amount of motility and the postures assumed in sleep by catatonic patients appear to be little different from normal subjects.¹ H. M. Johnson found that, in some cases of functional neurosis, the point of least motility was moved forward even to the middle of the fourth hour.²

Drugs and Sleep. A number of different drugs, known as hypnotics, are far too often used for the production of sleep. There is, however, much uncertainty over the possibility of these drugs ever producing normal sleep states. They may produce unconscious states, but these may be very different from sleep. Some psychiatrists are so certain of this that they believe a little normal sleep is far better for a patient than much unconsciousness produced by drugs. Sometimes drugs

¹ Dubois, P. H., "Studies of catatonia, III. Bodily postures assumed while sleeping," *Psychiat. Quart.*, 1934, 8, 546-552. Forbes, T. W., "Studies of catatonia, II. Central control of cerea flexibilitas," *Psychiat. Quart.*, 1934, 8, 538-545.

² De Sanctis, S. and Neyroz, W., "Experimental investigation concerning the depth of sleep," *Psychol. Rev.*, 1902, 9, 254-282. Johnson, H. M., "Sleep" (Reading 23 of W. L. Valentine's *Readings in Experimental Psychology*), p. 269. Rosanoff, A. J., *Manual of Psychiatry* (6th ed.), New York, Wiley, 1927. Pp. 345-346.

are used merely for a quieting effect, in order that normal sleep may be facilitated through the establishment of the inducing relaxation. In such ways drugs in expert hands may be useful; but it must be ever kept in mind that such drugs do not remove the causes of insomnia.

Sleep, it may be concluded, is a normal function of the human being and should never be thought of as other than that. Like other normal functions, it may suffer psychogenic abnormality. The prevention of the abnormality involves the prevention of psychoneurotic disturbances, the avoidance of excessive strain and fatigue, the establishment of regular habits of sleep and so far as possible the conditioning of sleep to ideational rather than to sensory stimuli, the prevention of conditions which produce disturbing stimuli, and, above all, the achievement and maintenance of a peaceful mind. Lastly, it should always be recalled that the quality of sleep is far more important than the quantity.

SELECTED REFERENCES

- Adie, W. J., "Idiopathic narcolepsy: a disease sui generis; with remarks on the mechanism of sleep," *Brain*, 1926, 49, 257-306.
- Burnham, Wm. H., "The hygiene of sleep," *Ped. Sem.*, 1920, 27, 1-35.
- Claparède, E., "Esquisse d'une théorie biologique du sommeil," *Arch. de psychol.*, 1905, 4, 245-349.
- Claparède, E., "Théorie biologique du sommeil et de l'hystérie," *Arch. de psychol.*, 1928, 21, 113-174.
- Coriat, I. H., "The nature of sleep," *J. Abn. Psychol.*, 1908, 3, 1-32.
- Foster, J. C., Goodenough, F. L. and Anderson, J. E., "The sleep of young children," *J. Genet. Psychol.*, 1928, 35, 201-218.
- Giddings, G., "Normal sleep pattern for children," *J. Amer. Med. Asso.*, 1934, 102, 525-529.
- Gillespie, R. D., *Sleep, and the Treatment of Its Disorders*. New York, Wood, 1930. Pp. 267.
- Hess, W. R., "Le Sommeil," *C. r. Soc. biol.*, 1931, 107, 1333-1364.
- Hess, W. R., "The autonomic nervous system," *Lancet*, 1932, 223, 1199-1201, 1259-1261.
- Johnson, H. M. and Swan, T. H., "Sleep," *Psychol. Bull.*, 1930, 27, 1-39.

318 SLEEP AND ITS ABNORMALITIES

- Johnson, H. M., "Sleep," (Reading 23, pp. 241-291, of W. L. Valentine's *Readings in Experimental Psychology*, 1931.)
- Kleitman, N., "Sleep," *Physiol. Rev.*, 1929, 9, 624-665.
- Manacéine, Marie de., *Sleep: Its Physiology, Hygiene, etc.*, London, Scribner, 1897. Pp. 341.
- Nachmansohn, D., "Zur Frage des Schlafzentrums," *Zsch. f. d. ges. Neur. u. Psychiat.*, 1927, 107, 342-401.
- Pavlov, I. P., *Conditioned Reflexes*. Oxford, 1927. Chap. XV.
- Piéron, H., *Le problème physiologique du sommeil*. Paris, Masson, 1913. Pp. 520.
- Renshaw, S., Miller, V. L. and Marquis, D. P. *Children's Sleep*. New York, Macmillan, 1933. Pp. 242.
- Shepard, J. F., *The Circulation and Sleep*. Univ. of Michigan Pub., 1914. Pp. 83.
- Sidis, B., "An experimental study of sleep," *J. Abn. Psychol.*, 1908, 3, 1-32, 63-96, 170-207.
- Swan, T. H., "A note on Kohlschütter's curve of the 'depth of sleep,'" *Psychol. Bull.*, 1929, 26, 607-610.
- Van Ormer, E. B., "Retention after intervals of sleep and waking," *Arch. of Psychol.*, 1932, No. 137.
- Vaschide, N., *Le sommeil et les rêves*. Paris, Flammarion, 1911. Pp. 307.
- Von Economo, C., "Sleep as a problem of localization," *J. Nerv. and Ment. Dis.*, 1930, 71, 249-259.
- Worster-Drought, C., "The treatment of insomnia. I. General considerations." *Lancet*, 1927, 213, 720-721; II. "Therapeutic measures." *Lancet*, 1927, 213, 767-768.
- Wortis, S. B. and Kennedy, F., "Narcolepsy," *Amer. J. Psychiat.*, 1933, 12, 939-946.

CHAPTER XV

BEHAVIOR EFFECTS OF EPIDEMIC ENCEPHALITIS

GENERAL DESCRIPTION, SEQUELAE, PERSONALITY AND
BEHAVIOR EFFECTS, INTERPRETATIONS, POSSIBILITY OF
RE-EDUCATION.

Since the famous epidemic of influenza toward the end of the World War period, there has been a steadily mounting interest in a form of encephalitis which appears to be in some manner related to influenza. It has been popularly known as "sleeping sickness," although this term is misleading in two ways. Many are prone to confuse it with the African sleeping sickness, and there is the mistaken notion that the disease is always characterized by a period of sleep or lethargy or coma. The term encephalitis lethargica has been, and still is, widely used; but, as the lethargic state does not always appear, the term epidemic encephalitis is now often considered to be much better usage.

The first scientific description of epidemic encephalitis was made by Von Economo in 1917 but it must not be supposed that this dates the first appearance of the disease. There is now ample reason for thinking that there have been other and earlier epidemics of it and there is more than a suspicion that it may have been endemic for a very long time in Oriental countries. Perhaps the movement of Oriental troops out of their native lands and into association with European and American troops may have had something to do with its modern appearance in epidemic form. Its relation to influenza is also not clear; but there are many who incline to the opinion that the influenza somehow reduces the resistance, or otherwise makes the individual especially susceptible, to epidemic encephalitis.

Psychological interest in the effects of this disease has risen

rapidly as psychologists have discovered the many and varied effects which it may have upon subsequent behavior and upon personality organization.

General Description. While the student of psychology will rarely have anything to do with the acute forms or phases of encephalitic cases, it is well, nevertheless, to know their general characteristics. Before the acute stage appears there may be headache, general feeling of ill health, chilly sensations, and sometimes a disturbance of visual perception which will arrest the attention of the psychologist. Diplopia is often reported; sometimes a blurring of vision; and there are also instances of other disturbances of visual function and co-ordination. These visual disturbances may be a part of the acute stage.

It is now known that the acute stage may appear in either of two general patterns or syndromes. One of these is characterized by the condition of lethargy or stupor or coma which has given to the disease its popular name of "sleeping sickness," although there may be considerable difference between this state and that of normal sleep. There is a retardation of mental functions and not infrequently the appearance of paralytic phenomena. In the other acute form, there is no lethargy or "sleep"; but there is instead a marked heightening of motor activity. The patient is very restless and highly irritable, is excitable, may suffer a marked lack of sleep, and may have convulsive seizures.

The acute phase, which may continue for several days or even a few weeks, may be followed by a chronic phase of unknown duration. But it is now well established that there are cases in which no acute stage ever appears, or it may be so mild that it is passed over as a slight cold. From all of these forms there may come after-effects of much social significance.

Sequelae. It is generally admitted that there is no other disease, not even syphilis, that can produce so many different kinds or forms of organic and functional disturbance of the central nervous system. Figures on the frequency of these

sequelae vary greatly. Some reports are to the effect that as many as one-half of those who survive the acute stage manifest them.¹ The appearance of these after-effects may come immediately upon the subsidence of the acute stage, and they may not appear for several years. Where the disease occurs in small children the intelligence may be seriously affected; but such a residual effect is much less likely to occur in persons of adolescent or mature years.

The sensory nerves may be atrophied by the disease, but central disturbance of motor functioning appears more frequently. One disturbance presents a very peculiar pattern and is known as the Parkinsonian syndrome.² In this there is a marked lack of normal expressiveness of face and gesture. The face presents what is sometimes termed a "mask" appearance. In the functioning of the skeletal muscles there is both hypokinesia and hypertonus. Superficial observation might lead one to think that these Parkinsonian cases were catatonias, but more careful investigation reveals that the mental functioning is far from being like that of the catatonic.³

Personality and Behavior Effects. Of these there are also many. The sleep reaction may be much and curiously disturbed. The sleep rhythm may be reversed. There may be uncontrollable spells of sleep, narcolepsy as it is termed. There may be tremors and tics and other motor disturbances which remind one forcibly of the motor phenomena studied under hysteria and psychasthenia.

One outstanding and frequently mentioned alteration of the behavior appears often to be a complete change in the personality. From being well-trained, orderly and co-operative the

¹ Reports indicate that the disease is fatal in twenty to twenty-five per cent of cases.

² It should be kept in mind that this syndrome is not always produced by encephalitis.

³ A remarkable list of the relative frequency in one hundred cases of both initial and secondary symptoms will be found in the following: Stefani, S., (Statistical notes on 100 cases of epidemic encephalitis) 1928. *Psychol. Abstracts*, 1929, 3, No. 1195.

person becomes impulsive, difficult, unco-operative, tactless, and quite unpredictable. While this change is more frequently reported of children, such alterations do appear in adults. In such cases there appears to be what one author has termed a "paralysis of inhibitions."¹ The behavior also becomes peculiarly childish. There is a persistent seeking and apparent craving for attention. Such persons are easily influenced by the attitudes of others; they are suggestible; and they appear to find pleasure in attention to their own ailments. Emotional depression sometimes appears, and this is occasionally of the agitated variety. On the whole the personality so affected takes on many of the characteristics of the constitutional psychopath, and, as the reader already knows, this is a direction of alteration with serious social consequences.

Just as constitutional psychopathy may present serious conduct delinquencies so may those who suffer this personality alteration by encephalitis. The irritability, the loss of control, and the impulsiveness all make delinquency of one sort or another almost a certainty. Many such cases are reported, especially where the disease has had its onset in childhood and early adolescence. And what is more troublesome is the high probability that there are many unrecognized cases of encephalitis, cases where there never was an acute stage or in which the acute stage was sufficiently atypical to pass unrecognized. Perhaps a considerable number of delinquent boys and girls are so because of an encephalitic disturbance of control. Some are known to be such with a reasonable degree of certainty; hence it is possible that there may be many more. Perhaps some who have been classed as constitutional psychopaths are really instances of unrecognized encephalitis. These problems are to-day giving students of psychopathology and also of social welfare no little concern.

Interpretations. That there is much in the sequelae of encephalitis which is unquestionably organic in nature no one can

¹ McNeil, D., "A peculiar transformation of personality due to encephalitis lethargica," *Amer. J. Psychol.*, 1923, 34, 13-31.

seriously doubt. The paralyses have the characteristics of organic paralyses; the Parkinsonian syndrome appears in other forms of disease disturbance which make it unquestionably organic; and the atrophies of the sensory tracts are obviously also organic.

But the changes in control of emotions, the childishness, the interest in the self and its ailments, the emotional outbursts, and so on are not so easily explainable in terms of organic lesion. That the disease may damage the hitherto developed cortical organization and consequently the control of emotional reactions is conceivable. It is well known that the latest achievements in development are the most easily disturbed. There is, however, a growing conviction that, in addition to the damage caused by the encephalitis itself, there are other alterations of behavior which are definitely secondary. The social situation into which a child must fit after an attack of encephalitis is not an easy one. There is much popular misconception of the damages wrought by such a disease. If, then, a child has suffered some impairment of sensory or motor function, or both, from encephalitis, and seeks thereafter to return to school and the social contacts of childhood, there is almost certain to be enough in the social situation to explain occasional outbursts of anger and rebelliousness. Perhaps much of that which is reported as personality alteration can be explained thus as a reaction of a partially damaged organism in an unfavorable environment. Perhaps much of the delinquency and misbehavior can be so explained in certain cases; but there are others where the functional or reactive interpretation does not work as well.

Possibility of Re-education. What the future is for these encephalitic cases is even less clear. That some of them do show improvement with careful supervision and training has been sufficiently demonstrated. When children so disturbed are returned to the public schools, their progress is not as good as when they are given the greater personal attention and the more intelligent care of a special institution. Whether or not

it will ever be possible to re-establish the lost emotional control, to recover from what appears to be a loss of personality integration, remains an open question. An apparent recovery in one or even in a few cases would mean little except for those cases, because the disease produces so many different patterns of damage. Thus what might be possible with some cases might be equally impossible with others. While about all this there is much difference of opinion and report, there is a tendency to agree on the probability that cases which manifest the Parkinsonian syndrome are less likely to recover.

SELECTED REFERENCES

- Bond, E. A. and Appel, K. E., *The Treatment of Behavior Disorders Following Encephalitis: an Experiment in Re-education*. New York, Commonwealth Fund, 1931. Pp. 163.
- Bond, E. A. and Appel, K. E., "The treatment of post-encephalitic children in a hospital school," *Amer. J. Psychiat.*, 1931, 10, 815-828.
- Bromberg, W., "Mental states in chronic encephalitis," *Psychiat. Quart.*, 1930, 4, 537-566.
- Gillespie, R. D., "Epidemic encephalitis: some psychical sequelae," *J. Ment. Sci.*, 1924, 70, 1-24.
- Hill, T. R., "Juvenile behavior disorders in epidemic encephalitis," *Lancet*, 1929, 216, 968-971.
- Jelliffe, S. E., "The mental pictures in schizophrenia and in epidemic encephalitis; their alliances, differences, and a point of view," *Amer. J. Psychiat.*, 1927, 6, 413-465.
- McCowan, P. K. and Cook, L. C., "The mental aspect of chronic epidemic encephalitis," *Lancet*, 1928, 214, 1316-1320.
- McNeil, D., "A peculiar transformation of personality due to encephalitis lethargica," *Amer. J. Psychol.*, 1923, 34, 13-31.
- Matheson Commission, *Epidemic Encephalitis*. New York, Columbia Univ. Press, 1929. Pp. 849.
- Matheson Commission, *Epidemic Encephalitis* (second report). New York, Columbia Univ. Press, 1932. Pp. 155.
- Patry, F. L., "The diagnosis and treatment of post-encephalitic Parkinsonism, with case reports," *J. Nerv. & Ment. Dis.*, 1929, 617-641.
- Strecker, E. A. and Ebaugh, F. G., *Practical Clinical Psychiatry*. Phila., Blakiston, 1931. Pp. 147-154.

CHAPTER XVI

HYPNOTISM AND SUGGESTIBILITY

INDUCTION OF HYPNOSIS, APPEARANCE IN, POSITIVE SUGGESTIONS, NEGATIVE SUGGESTIONS, HYPNOTIC DELUSIONS, ALTERATIONS OF SENSITIVITY, ALTERATIONS OF MOTOR FUNCTIONING, ALTERATIONS OF CIRCULATION OF BLOOD, MEMORY EFFECTS, VOLITION AND CHOICE, STAGES OF, PHYSIOLOGICAL ASPECTS, WAKING FROM, WHO CAN BE HYPNOTIZED, WHO CAN HYPNOTIZE, SUGGESTION AND SUGGESTIBILITY, THEORIES, CROWD HYPNOSIS, THERAPEUTIC VALUES, HYPNOSIS AND THE PHENOMENAL, DANGERS OF.

Some form of hypnotism seems to have been used for one purpose or another since very ancient times.¹ In modern times the attention of the popular and the scientific world was first forcibly attracted to it by the work of Mesmer (1733-1815). He was earlier interested in the influence of planets upon human beings, from that he passed to experimentation with electromagnetism for therapeutic effects. Then, for reasons not now well known, he conceived the notion that the effects he obtained were due to influences emanating from his own person — hence the term animal magnetism. Obviously the term mesmerism comes from the name of Mesmer himself. He seems not to have been especially successful until he went to Paris (1778), where a combination of circumstances brought him and

¹ For extended presentations of this history see: — Binet, A., and Féré, C. S., *Animal Magnetism*. New York, Appleton, 1888. Bramwell, J. M., *Hypnotism, its History, Practice and Theory* (3rd ed.). Phila., Lippincott, 1930. Chap. II. Hull, C. L., *Hypnosis and Suggestibility*. New York, Appleton-Century, 1933. Chap. I. Janet, P., *Psychological Healing*. New York, Macmillan, 1925. Vol. I, part II. Moll, A., *Hypnotism* (4th ed.). New York, Scribner, 1909. Chap. I. Podmore, Frank, *Modern Spiritualism*. London, Scribner, 1902. Vol. I, part I, chap. VIII.

his practices quickly into the limelight. He was soon besieged by patients who desired to experience what was supposed to be the healing influence of the animal magnetism. At this stage it will be observed that the state itself was supposed to be the therapeutic agent and not suggestions or catharsis or re-education aided by the hypnotic state.

The demands made upon Mesmer by his followers led him to reason quite logically that, if this newly discovered influence or force were of a magnetic nature, he might charge material objects with the force; and then, by bringing the patients into contact with the charged objects, produce the same effect. This he did with his famous "baquet," a crude sort of storage battery with long handles for the patients. The discussion aroused by his practices led to investigations which clearly revealed that the effect produced in the patients was not of a magnetic nature at all but was attributable to the expectations and state of mind of the patients themselves. There then followed a period of intense controversy. One group would prohibit the practice and condemned its practitioners as frauds. Another as ardently defended it, although they differed among themselves over its interpretation. After a few years, the antagonists won, and the use of hypnotism gradually subsided. Beginning about 1880 there was a marked and eventually heated revival of the discussion, which lasted for about twenty years and then again subsided rapidly. This centered around the controversy between Charcot and his followers and the school of thought led by Bernheim of Nancy. The former insisted upon interpreting hypnosis in terms of organic changes; the latter defended a purely functional interpretation in terms of suggestion.

Experimental psychology almost wholly ignored the phenomena of hypnosis until about 1920 or a little later. Since then there has been an active revival of interest in the subject and a wealth of experimental studies has been published, studies in which for the most part there has been the utilization

of the now familiar checks and controls of the modern psychological laboratory.¹

The Induction of Hypnosis. Methods for the induction of hypnosis are quite numerous, even though the differences between them are not always very great. In the consideration of these it is customary to distinguish between the so-called physical and the mental methods.

The *physical methods* include all those which rely primarily upon the use of some special object or mode of sensory stimulation other than the voice and presence of the operator. Sometimes a small flashing light produced by a rotating mirror or set of mirrors is used for the subject to fixate. Here the method is merely that of telling the subject to sit quietly and gaze at the flashing light, as a consequence of which he will pass into the hypnotic state. Any object which will serve readily as a point of fixation will serve equally well. Apparatus manufacturers supply a small highly polished ball fixed to the end of a pliable wire, which in turn protrudes from a strap to be fastened around the head of the subject. This bright ball is then adjusted so that it is just barely visible when the eyes are turned well upward. The use of this quickly brings on fatigue of the eye muscles. Some have thought this an aid in the production of hypnosis; others have apparently found it undesirable or unnecessary. Usually the visual stimulus has been weak and continuous. Occasionally, however, operators have used an intense, sudden flash of light. Other senses have also been used. Certain spots or zones said to be hypnogenic have been touched, sometimes the arms and legs have been gently stroked with sweeping movements called passes, continued rocking or whirling is often effective and indicates an approach through kinesthesia, and certain primitive peoples have utilized auditory stimuli by beating drums in monotonous fashion.

The *mental method* of induction consists in some procedure

¹ See especially Hull, C. L., *Hypnosis and Suggestibility*. New York, Appleton-Century, 1933. Pp. 416.

for directing the thought and expectation of the subject. Braid eventually used this, abandoning all apparatus aids. Bernheim urged the use of this direct method of suggestion. Where this is used (and also as a matter of fact in the physical methods) the mind of the subject is either accidentally or deliberately prepared for the hypnotization. Of course the designed preparation is the better. The patient is told quietly something of the nature of the hypnotic state, that it is not actually a sleep, although the word sleep will often be used for convenience, that it is a comfortable state of complete relaxation in which the subject will readily and willingly co-operate in every way with the operator, that he will do whatever the operator tells him to do, that under no circumstances will the operator order him to do anything which will be injurious, and that he will subsequently awake not only none the worse for the experience but perhaps even with a feeling of comfort and refreshment.

These instructions are made perfectly clear to the subject, repeated if necessary to make certain of the fullest willingness, expectancy and attitude of co-operation. If the subject has never before been hypnotized, it is usually considered wise to explain that the first attempt often does not produce anything more than a little period of relaxation, that it may in fact require many trials before a complete hypnotization is achieved. This is necessary to avoid discouragement on the part of the subject, and the consequent loss of co-operation.

The subject is told to lie down on a couch, or to relax in a comfortable chair. Usually he is told to look straight at the operator, to relax completely, to think of nothing but what the operator is saying and of the sleep-like condition which is coming on, that gradually this will come, that his eyelids will begin to feel heavy and that as they do so he is to let them fall, always attending to what the operator is saying and to the on-coming sleep. The operator continues to talk steadily, firmly, confidently, in a more and more monotonous and repetitious manner of the tired eyes, the relaxation and the sleep that is

coming on. This may end by slipping over into the first statement, several times repeated, that the subject is now asleep, when the operator observes that the hypnotization is progressing satisfactorily. Some operators say, as they see the subject slipping into the hypnotic state, that his eyes are closed and that he cannot open them, that he may try but that he cannot open them. Then they often place a handkerchief or other convenient object in the hand of the subject and say that his hand is to close on it, then firmly say that the subject cannot open the hand, that he may try but that he cannot, he cannot.¹

The time necessary for such a hypnotization varies greatly. Some subjects are more responsive than others, naturally or because of practice. In some it may require much time and skill to overcome lingering reluctance to be hypnotized, to "let go." Ordinarily it is accomplished in a few minutes, from one up to perhaps fifteen, although as much as an hour has been necessary in some cases.

This procedure for hypnotization by verbal instruction has even been reduced to phonographic presentation with remarkably satisfactory results.² Obviously such a mechanization makes possible exact reproduction of instructions for repetition of experiments and eliminates many variable factors of personal presence and manner.

The literature includes not a few reports of the use of narcotic drugs as aids to hypnotization. In such instances the state produced is a complication of the drug effect and the hypnosis. It might be better to say that the hypnosis is superinduced upon a partial narcosis. In the case of very nervous subjects whose attention can be held with difficulty the use of the narcotic might serve to quiet and thus make the hypnotiza-

¹ For a more detailed presentation of this method and with some variations see Hull, C. L., *Hypnosis and Suggestibility*, chap. II.

² Estabrooks, G. H., "A standardized hypnotic technique dictated to a victrola record," *Amer. J. Psychol.*, 1930, 42, 115-116. Phonographic presentations for experimentation with waking suggestibility have also been used. See Hull, C. L., *Hypnosis and Suggestibility*, pp. 49 and 296.

tion easier or possible. The important point, however, in such cases is to keep clear in one's thinking the distinction between what is drug effect and what is hypnosis. Drugs alone do not produce hypnosis.

For the purpose of the interpretation which follows, a comparison should be made between the physical and the mental methods of inducing hypnosis. When this is done it will be seen that the distinction is really one of emphasis and not of essential nature. In all the many physical methods the subject is somehow prepared mentally for what is to happen. No subject was ever hypnotized by a bright light, or a noise, or by any sensory stimulation, without some knowledge of what was to happen. The physical stimuli used are but aids to the focalization of thought, the fixation of attention. In the mental methods the preparation of the mind is usually made consciously and carefully, as has been pointed out above, but they also involve the physical stimulus of the voice, the expression of the face, especially of the eyes, and perhaps also the gestures of the operator. No method is purely mental any more than any is purely physical.

Appearance in Hypnosis. If one has never seen a person hypnotized, one can best envisage the general appearance of the hypnotized subject by recalling the appearance of a person walking in his sleep. After the hypnosis has been satisfactorily induced, it is customary to tell the subject to open the eyes but not to wake up, sometimes the opening of the eyes is aided by the fingers of the operator. Then the subject does look and act very much like one walking in sleep. The face is flat and expressionless or perhaps a bit tense, the eyes stare in an expressionless manner, movements are usually made slowly and with a somewhat stiff precision. Many alterations of this general appearance occur in response to suggestions made during the hypnosis. As a consequence of such suggestions the face may express profound emotion and the subject be made to move quite rapidly, even with agility. Hallucinations are easily

and perhaps commonly produced in hypnosis. These are usually described either as *positive suggestions* or as *negative suggestions*.

Positive Suggestions. In a positive suggestion, the subject is told that he senses something which is not actually present to the senses. He is told, for example, that he sees a bird flying about the room, or that he hears music, or that he is touching soft velvet, or that he has a stomach-ache, anything in fact. Upon command the subject behaves as though he were actually perceiving the object or the experience mentioned by the operator. Startling demonstrations of the influence of these positive suggestions upon the perceptive process are readily made. A subject is told emphatically that a certain receptacle before him contains sugar, that it is sweet. Then he is told to taste the contents, which are actually salt. If the suggestion has been sufficiently well established, the subject smiles with pleasure and agrees that it is sweet; but, if the suggestion has not been sufficiently well established, the subject may fail entirely to get the sweet of sugar, or he may with some evidence of disgust and more of puzzlement respond that, while it may be sugar, it seems to taste more like salt. In the latter case, there is apparently a partial fusion of the sweet hallucination and the salty sensation.

Whether or not these are genuine hallucinations was seriously questioned by Sidis,¹ who thought that a delusion rather than an hallucination was established by the suggestion, that the subject believed he had seen and heard and touched and tasted and the like because he was emphatically told that he had when in a state of high suggestibility. To the contrary Edwards² seems to have shown the possibility of producing the consciousness of sensory qualities by suggestion in the un hypnotized minds of trained introspectors in the psychological

¹ Sidis, B., "Are there hypnotic hallucinations?" *Psychol. Rev.*, 1906, 13, 239-257.

² Edwards, A. S., "An experimental study of sensory suggestion," *Amer. J. Psychol.*, 1915, 26, 99-129.

laboratory. If Edwards is correct then perhaps the positive suggestions in the hypnotic state do produce hallucinations, as most writers have supposed.

Negative Suggestions. By means of the negative suggestion, some sensory or perceptive process, which would otherwise be aroused by the environment, is prevented or inhibited. For demonstration purposes a subject may be told that a certain person seated in a chair directly in front of him will fade out and entirely disappear, first the person will disappear and then following him the chair will go in like manner. This is told the subject firmly and confidently with much repetition unless the subject is exceptionally well trained. Then the subject manifests all the external signs of watching with interest the quite unusual phenomenon of the disappearance of a man and then of a chair. Retrospective descriptions given by subjects after waking are to the effect that they did witness just such a disappearance. It seems probable that the process by which this is brought about is much the same as that which produced the quality sweet when the subject was actually stimulated by salt. The very directions given concerning the disappearance imply of course the gradual substitution in the mind of the subject of the floor or wall behind the chair of the seated man for the perceptions of the man and the chair. If this is insisted upon forcibly enough, the substitution takes place. Perhaps, then, the so-called negative suggestion is negative more by implication than it is in fact. It may be really but a kind of positive suggestion. It might, however, be the gradual production of an inhibition (dissociation?) related to the amnesias producible through hypnosis.

Hypnotic Delusions. States of mind or processes generally accepted as delusions are also produced in the hypnotic state. A subject may be told that he is Napoleon and he will proceed at once to strut about and behave in what might be called a Napoleonic manner. A subject may be told that he has just received a legacy of a million dollars, almost anything, in fact,

and he will manifest all the usual behavior appropriate to belief in such ideas. The similarity here to the delusory states in the psychoses and in some of the hysterias should be observed.

Alterations of Sensitivity. It was early discovered that *anesthesia* could be so well established through suggestion in hypnosis as to make possible the performance of even major operations without pain to the subject. The development of chemical anesthesia checked this type of experimentation; but reports continue to appear from time to time of minor operations, tooth extraction, for instance, in which hypnotic anesthesia has been successfully used.¹ While the factual nature of these reports is not to be seriously questioned, the serviceability of hypnosis in the surgery is open to several rather obvious objections. The time necessary for so complete a hypnosis and the increased difficulty of producing hypnosis at all in a patient excited by the prospect of an operation are probably sufficient reasons for its rejection for any but most exceptional cases. Furthermore there is ample evidence for the possibility of the severe nervous stimulation incident to the operation awakening the patient in spite of all that the operator can do to prevent. Should such happen with a patient in the middle of a major operation it might be, to put it mildly, rather difficult to calm the patient sufficiently to make rehypnotization possible.²

In the ordinary demonstrations of hypnosis, it is customary to tell the subject that he no longer feels any sensation from his arm, for example; and, after the suggestion is well established, to prick the arm gently with a pin. In a thoroughly successful demonstration the subject does not manifest the usual reactions of pain. Naturally this has raised many questions and it prevents a fairly open road to direct experimental investigation.

¹ There are also occasional reports, especially from Germany, of the use of hypnotic anesthesia for the reduction or prevention of pain in child-birth.

² For the medical attitude see Gwathmey, J. T. and Baskerville, Chas., *Anesthesia*, pp. 644-665.

While the results of the investigations that have been made are not in perfect agreement, nevertheless they do on the whole support the older notions of hypnotic anesthesia. The normal facial flinch to a sharp pin prick does not appear and the usually accompanying respiratory changes are absent. The galvanic skin reaction is reduced. There appears to be also an absence of the usual awareness of fatigue; and there have also been demonstrated marked reductions in the reactions to loud sound stimuli. If all of these changes could be produced in the waking state by voluntary inhibition, grave doubt would be thrown upon the genuineness of these alleged demonstrations of hypnotic anesthesia; but so far indications are against the possibility of such voluntary inhibition.¹

Rapport, which was once thought to be of great importance as an indication of the presence of the hypnotic state, is now looked upon as but a phase of the sensory alterations possible in hypnosis. This was originally looked upon as a peculiar relationship between the hypnotized subject and the hypnotizer. The subject was supposed to be exclusively responsive to the hypnotizer and only to him. Experimental studies have, however, brought about a distinct change in the concept of rapport.² It now seems quite clear that rapport is but a form of partial anesthesia, the subject being limited in his sensory responses to those aroused by the hypnotizer. And it is also accepted that rapport can be both limited and disturbed by previously established attitudes or autosuggestions.³

¹ Dynes, J. B., "An experimental study in hypnotic anesthesia," *J. Abn. & Soc. Psychol.*, 1932, 27, 79-88. Hull, C. L., *Hypnosis and Suggestibility*, pp. 250-267. Sears, R. B., "An experimental study of hypnotic anesthesia," *J. Exper. Psychol.*, 1932, 15, 1-22. Young, P. C., "An experimental study of mental and physical functions in the normal and hypnotic states," *Amer. J. Psychol.*, 1925, 36, 214-232.

² A change which is not limited to the laboratory type of experimentation. The psychoanalysts by their methods have come to the same conclusion. See Schilder, P. and Kauders, O., *Hypnosis*. Nerv. and Ment. Dis. Monog. Series, No. 46, 1927.

³ Hull, C. L., *Hypnosis and Suggestibility*, pp. 267-270. Young, P. C., "The nature of hypnosis: as indicated by the presence or absence of post-hypnotic amnesia and rapport," *J. Abn. & Soc. Psychol.*, 1928, 22, 372-382.

Hypnotically produced *hyperesthesia* has long been a topic of no little interest. Subjects are said to avoid objects when blindfolded or to select accurately the card upon which they have been told is a special picture, even when the card has been mixed with others equally blank. That the phenomena take place one need not question, but that they are genuinely cases of hyperesthesia is open to serious question. Individuals actually blind do the same thing without any evidence of hyperesthesia, but by using perceptions of cutaneous and auditory details which the sighted person does not notice. These little sensory cues can at any time be readily discovered by any sighted person if he but goes about for a little time with his eyes closed. The detection of the correct card, when mixed with others which are apparently just like it, presents the same type of behavior now so well known since the study of Clever Hans and the many other instances of responses by perception of very slight differences. P. C. Young has experimentally demonstrated that there are no powers of sensation or perception in the hypnotic state which cannot be duplicated by control subjects in the normal or waking state.¹

Alterations of Motor Functioning. The possibility of certain abnormal, or at least unusual, forms of motor functioning have already been briefly mentioned in the description of the method for the induction of hypnosis. Such continued contractions of the muscles make possible the demonstrations of cataleptic rigidity so often used by traveling performers to overawe their audiences. The procedure is merely that of telling the hypnotized subject that the muscles of his neck are stiff, that his entire body is perfectly rigid. Usually the suggestion

Young, P. C., "Is rapport an essential characteristic of hypnosis?" *J. Abn. & Soc. Psychol.*, 1927, 22, 130-139.

¹ Stratton, G. M., "The control of another person by obscure signs," *Psychol. Rev.*, 1921, 28, 301-314. Young, P. C., "An experimental study of mental and physical functions in the normal and hypnotic states," *Amer. J. Psychol.*, 1925, 36, 214-232; "An experimental study of mental and physical functions in the normal and hypnotic states: additional results," *Amer. J. Psychol.*, 1926, 37, 345-356.

is assisted by touching the parts mentioned. The observer will see the limbs stiffen. Then the subject is quite dramatically laid out with the head on one chair and heels on another. Sometimes a weight is placed on the body as proof of its unusual condition. Nothing superhuman, of course, is achieved, although it does not require much trickery to mislead an audience into going home with the most exaggerated tales of what actually took place. After waking, the subject may or may not experience fatigue from the unusual expenditure of effort and the unusual form of activity. This depends upon the suggestions made before waking.

Laboratory experiments with these phenomena have produced somewhat conflicting results. Hull, after reviewing them, comes to the conclusion that the hypnotic state does not produce a supernormal muscular power; but he also believes that the heightened suggestibility of the hypnotic trance state does make possible through suggestion the production of muscular performances which could not be voluntarily achieved in a waking state.¹

Alterations in Circulation of Blood. The effects of suggestion upon the circulation of the blood appear to be quite remarkable; but they are less frequently demonstrated, and there has been unfortunately little systematic experimental study of these phenomena. For demonstrational purposes a small piece of paper of about postage stamp size is wet and stuck to some portion of the skin. The subject is told that there is a boil developing or some such instruction which will serve to fixate attention upon the spot and to arouse sufficient expectation of disturbance at that point. After a little time the bit of paper is removed and the desired inflammation appears. That the blood distribution in the body is to a certain extent influenced by the content of attention is well known. Possibly these instances of "artificial stigmata" are but variations or exaggerations of this normal process.

¹ Hull, C. L., *Hypnosis and Suggestibility*, chap. IX.

Cases of hypnotically produced "suspended animation" doubtless deserve mention here. Although now quite generally prohibited by law, demonstrations of subjects in this condition were at one time all too common. The suspension of animation was, of course, far from complete, although there was evidently a considerable reduction in both heart action and respiration. Hypnotized subjects, when this state was desired, were told that they would pass into a very deep sleep from which they would not awake until a given time or a given signal. Sometimes such subjects were exposed to view in store windows for the wonderment of the public. In the older literature will be found reports of instances in India where the subject was even buried for a time. The student of hysteria will not fail to note the striking similarity in these cases to the now familiar hysterical narcoleptic seizures.

Memory Effects of Hypnosis. These are especially important. They have long been recognized and demonstrated. Apparently every known form of memory abnormality may be artificially produced in hypnosis. After a deep hypnosis there is usually a fairly complete amnesia for the events during the hypnosis. The material, however, for which the subject is amnesic in the normal or waking state may be readily recalled in another hypnotic state. This would hint at the possibility of some relationship between successive hypnotic states in the same person. It may, however, be but another indication of the hypermnnesia familiar in other states of abstraction. Certainly there are many reports of the recall in hypnosis of events which the subject could not voluntarily recall in the normal waking state. Unnoticed incidents of waking life, content of fever deliria, forgotten items from dreams — all have been recalled and reproduced under hypnosis.

Experimental studies on the voluntary recall of meaningful material learned long before have shown that much more can be recalled in the trance than in the normal state. Why this should be is not so clear. Perhaps inhibitions to recall are

eliminated by suggestion in hypnosis. Perhaps the hypnotic state itself involves a heightened activation of the cortical areas involved. But the experimental studies have also shown that there is little if any improvement in the hypnotic recall of very recently learned material. Obviously still more experimentation is needed.¹

Amnesias of the dissociative variety are also readily demonstrable. The writer once saw a subject told that the vowels of the alphabet no longer existed for him, that he had totally forgotten them. Then the subject was told to go to the blackboard and write his name and, following that, the alphabet. He did so with all the ease of the waking state, but every vowel was omitted.

Perhaps the most impressive of all the memory effects produced through hypnosis are those classed as *post-hypnotic*. Of these there are a number of forms. The most notable is possibly that where the suggestion does not take effect until some considerable time has elapsed after waking. The subject may, for example, be told in the hypnotic state that some time afterward when he hears the operator use a certain designated word he will go across the room and open an umbrella which stands in the corner. Upon being awakened, the subject appears to be perfectly normal. After a time, the operator in conversation quite casually uses the designated word. Upon hearing this the subject promptly carries out the directed act. If asked why he did it, he is likely to appear a little embarrassed and proceed to explain that he "just wanted to, that was all," or something equally insignificant.

The memory of the waking state may be assisted by the post-hypnotic suggestion. During the hypnosis the subject

¹ Huse, B., "Does the hypnotic trance favor the recall of faint memories?" *J. Exp. Psychol.*, 1930, 13, 519-529. Stalnaker, J. M. and Riddle, E. E., "The effect of hypnosis on long delayed recall," *J. Gen. Psychol.*, 1932, 6, 429-440. Young, P. C., "An experimental study of mental and physical functions in the normal and hypnotic states: additional results," *Amer. J. Psychol.*, 1926, 37, 345-356.

may be told that he will, after waking, readily recall some item which he has hitherto been unable to recall except in hypnosis. The directed effect will follow. By this means the careful operator always awakes his subject for the last time with a complete memory for all that took place during the hypnotic states.

In contrast to this associative effect by means of the post-hypnotic suggestion, what appear to be dissociative effects may also be produced. The subject may be told that he will not recall some event after waking, or that upon waking he will be anesthetic in some designated area of the body, or that upon waking he will be paralyzed in some portion of the body. All of these are demonstrable. A slight variant is to establish the anesthesia or the paralysis in the hypnotic state and by suggestion cause the anesthesia or the paralysis to continue after waking.

The experimental attack on post-hypnotic effects has been almost entirely through the retention of learned reactions. These indicate quite clearly that while there may be no voluntary recall, or very nearly none, of material learned in the trance state the practice effects from that learning are not obliterated. With amnesia for the events of the trance period, a conditioned reaction established in the trance will continue to function just the same. Where some simple motor reaction has been directed by trance suggestion to continue in a specified association after the cessation of the trance (depression of the finger at sound of designated word), it has been observed that the post-hypnotic effect endures for a month at least and probably longer. More complicated instructions, however, have been found to fade more rapidly, perhaps because of the nature of the functions involved.

In the consideration of post-hypnotic phenomena and especially in efforts to experiment with them, the observation of P. C. Young must be kept in mind: that the achievement of post-hypnotic amnesia and the degree of it when achieved may

depend in large part on autosuggestion by the subject. Thus it is not to be thought of as always established in the same degree by exactly the same instructions.

Lundholm's experimentation with the behavior of subjects rendered anesthetic to a click by hypnotic suggestion led to an observation that may prove to be of no little significance. He found that such subjects could not be conditioned to the click in the post-hypnotic state, presumably because of the post-hypnotic anesthesia. But he found reason to believe that the failure was due not so much to an anesthesia as to an established attitude or tendency to behave as if there were no click. Perhaps this explanation may also apply to post-hypnotic amnesia and to post-hypnotic paralyses as well.¹

Volition and Choice. Questions concerning the condition of the will of the subject in the hypnotic state are often raised. If the term will is used in the current psychological sense, for the designation of an act for the end of which there is antecedent consciousness, then there is every reason for saying that such is the condition in hypnosis. Where the question implies the presence or absence of choice there must be a different answer. Those attitudes set up as a part of the process of inducing the hypnotic state preclude the possibility of deliberation or choice without a cessation of the hypnosis. This also answers the questions so often raised concerning the moral dangers involved. In so far as the suggestions are consistent with the habits and ideals of the subject they will be carried

¹ Hull, C. L., *Hypnosis and Suggestibility*, chap. VI. Kellogg, E. R., "Duration of the effects of post-hypnotic suggestion," *J. Exp. Psychol.*, 1929, 12, 502-514. Lundholm, H., "An experimental study of functional anesthetics as induced by suggestion in hypnosis," *J. Abn. & Soc. Psychol.*, 1928, 23, 337-355. Patten, E. F., "The duration of post-hypnotic suggestion," *J. Abn. & Soc. Psychol.*, 1930, 25, 319-334; "Does post-hypnotic amnesia apply to practice effects," *J. Gen. Psychol.*, 1932, 7, 196-201. Scott, H. D., "Hypnosis and the conditioned reflex," *J. Gen. Psychol.*, 1930, 4, 113-129. Strickler, C. B., "A quantitative study of post-hypnotic amnesia," *J. Abn. & Soc. Psychol.*, 1929, 24, 108-119. Young, P. C., "The nature of hypnosis: as indicated by the presence or absence of post-hypnotic amnesia and rapport," *J. Abn. & Soc. Psychol.*, 1928, 22, 372-382.

out, but if they are contrary to these habits and ideals the result will either be a refusal to do the thing suggested or such an emotional disturbance as to arouse the subject.

Unjustifiable conclusions have sometimes been drawn from certain experiments and demonstrations made under hypnosis. Subjects have often been given harmless daggers or toy pistols and told to kill some one. With such weapons the subjects will go through the motions of slaughter willingly enough. Such experiments prove nothing because the subjects are in a highly suggestible condition and so fall into the spirit of the game suggested by every act and word of the operator. There is no reason to assume even that they are beyond perceiving the harmlessness of the implements placed in their hands. If the subject is told to do something which is to him indecent or immoral, it is commonly believed that he will refuse or wake up. Consequently it may be said with certainty that, if a subject is not above committing murder or burning churches in his conscious state, he can be made to do such things in the hypnotized condition; but, if he is opposed to such things in his waking state, then he will in all probability not do them when hypnotized. Certain psychoanalysts are contending, however, that normal inhibitions can be weakened through hypnosis, thus releasing more primitive impulses. If this should prove to be the truth, it might be possible sometimes to make people do under hypnosis that of which they might subsequently be very much ashamed.

Stages of Hypnosis. The discussion of the stages of hypnosis does not seem to have been highly profitable. Various experimenters and students have attempted to recognize and to describe the different degrees of hypnosis. These range all the way from two to nine. The discussion reveals clearly that every hypnotized individual does not act like every other and that one and the same individual may not always manifest the same characteristics when hypnotized. Some of these differences may wisely be attributed to different degrees of whatever

shall eventually be agreed upon as the nature of hypnosis. However, it is equally clear that the individual mass of behavior patterns is a factor in the state produced, and that to some extent the procedure used in the induction of the hypnosis, together with temporary circumstances, may govern the characteristics of a given hypnotic state. Mesmer's subjects ordinarily fell into a state characterized by much muscular tension and movement, while the subjects of a contemporary experimenter, Faria, customarily fell into a sleeplike condition. Sometimes the subject seems to be little more than barely hypnotized and the operator is unable to produce more than a few very simple phenomena of motor disturbance. At another time the same subject, or it may be another subject, will be found in a highly responsive state, one in which all the phenomena of hypnosis can be demonstrated. Such differences are not explained by describing them as different stages. If they are stages, it still remains to be explained why one stage or form is produced at one time, or in one person, and a different stage or a different form at another time, or with a different subject.

Physiological Aspects. These have received no little attention. Charcot thought he discovered certain characteristic alterations in the reflexes. Bernheim contended that Charcot's altered reflexes were products of suggestion and that hypnotism was but an artificially induced sleep. In so far as plethysmographic studies are of value in the controversy, they do not support the sleep theory. Walden¹ showed very clearly that upon going into hypnosis there is at first a constriction of the arm, followed by some dilation, after which there is a gradually increasing constriction throughout the period of hypnosis. His subjects were hypnotized for three hours or more. This is more like increased psychic activity than it is like sleep. When suggestions are given during the hypnotic state there is a sudden sharp constriction of the arm, followed by a dilatation to the

¹ Walden, E. C., "A plethysmographic study of the vascular conditions during hypnotic sleep," *Amer. J. Physiol.*, 1900, 4, 124-161.

end of the suggestion, when the constriction returns to the point where it was before the suggestion interrupted. Again, when the subject is told to awake, there is the same sudden brief constriction, after which there is a rapid fall to the waking level. Very similar results were later obtained by Talbert, Ready and Kuhlman.¹ All this is strikingly different from the well-known dilatation of the arm in normal sleep.

Other physiological studies have left more uncertainty. Estabrooks found a very significant rise in electrical skin resistance in hypnosis; but another investigator, Levine, did not obtain such characteristic differences between hypnosis and the normal state. All this is further complicated by the uncertainty concerning the behavior of skin resistance in normal sleep. Studies of blood pressure, pulse, breathing, and basal metabolism also leave one in no little uncertainty. But it must be kept constantly in mind that sleep² can no longer be thought of as a simple pattern and that all of the states commonly designated as sleep are not necessarily alike. Perhaps there are many patterns of functional change classed as sleep; and the same may be true of the use of the term hypnosis. Kantor and Davis have indicated the high probability of this by their finding that there is a significant difference between the skin resistance in a passive hypnotic state and that which prevails in an active hypnosis. And they further found that the behavior of skin resistance in active hypnosis is more like that which prevails in the normal waking state than is the skin resistance in the passive, sometimes called the lethargic, state of hypnosis. The latter is more like what probably characterizes most forms of normal sleep. It also appears to be quite certain that the knee-jerk remains as in the waking state, while it is usually reported as absent in normal sleep.³

¹ Talbert, G. A., Ready, F. L. and Kuhlman, F. W., "Plethysmographic and pneumographic observations made in hypnosis," *Amer. J. Physiol.*, 1924, 68, 113.

² See chapter XIV.

³ Bass, M. J., "Differentiation of the hypnotic trance from normal sleep,"

Waking from Hypnosis. This is also brought about by suggestion. The hypnotized subject is told that upon a given signal he will awake, and he obeys. Various sensory stimuli are occasionally used as a means of arousal, but they usually are of such a nature as to imply that the operator desires the subject to wake up. If the subject's eyes are closed, some operators arouse by forcing the eyes open. Making a big noise can also be used. But both are suggestions for waking. If the subject is left indefinitely in the hypnotic condition without any orders to remain so, the very leaving of the subject is in itself again a suggestion that the operator is through and that he may now resume the normal state. As a matter of fact, when the subjects are so left, they will awake to normal consciousness after a lapse of time varying from a few minutes to a few hours. What governs the length of time is obscure; probably the explanation will be found in the psychology of the given subject rather than in the nature of hypnosis. The tendency of the human organism seems to be toward a normal consciousness. Just as people awake from normal sleep, come out of a faint, or recover from a hysterical seizure if left to themselves, so do people awake from hypnosis.

Who Can Be Hypnotized? This is a question which has long been a storm center in the discussions of hypnosis. Janet states that if a person can be hypnotized then that person has the mental state of an hysteric. Bernheim and Forel argued that any normal person may be hypnotized, and so did Bramwell. Whatever may be concluded concerning the ultimate nature of hypnosis, it is quite generally recognized that a certain degree of maturity and of normality is necessary. Small children are hypnotized only with great difficulty if hypnotized at all. The same may be said of those suffering any form of psy-

J. Exp. Psychol., 1931, 14, 382-399. Estabrooks, G. H., "The psychogalvanic reflex in hypnosis," *J. Gen. Psychol.*, 1930, 3, 150-157. Kantor, J. R. and Davis, R. C., "Skin resistance during hypnotic states," *J. Gen. Psychol.*, 1935, 13, 62-81. Levine, M., "Electrical skin resistance during hypnosis," *Arch. Neur. and Psychiat.*, 1930, 24, 937-942.

chosis which renders them incapable of understanding or of complying with the instructions of the operator. And of course the same would be true of the feeble-minded. Sex difference seems not to effect hypnotizability. Some people are, for reasons not yet entirely clear, much more readily hypnotized by some persons than by others. The two last items point to the probability already implied that the complete explanation of hypnosis involves the entire psychology of the individual, that the hypnotic behavior of individuals cannot be adequately explained in terms of the procedure for the induction and the production of the various phenomena of the hypnotic state itself.¹

Can a person be *hypnotized against his will* is a question often asked. To be perfectly accurate the answer must be negative. Strictly speaking, the question means to ask if a person can be hypnotized when he strongly desires not to be hypnotized or can he be hypnotized without his knowledge. That some sort of knowledge is necessary has already been pointed out. If a person strongly desired not to be hypnotized, such a person could readily avoid hypnosis by failing to comply with all the instructions given. On the other hand, a somewhat ignorant person who believed that hypnosis was due to some sort of occult power in the possession of the operator might strongly desire not to be hypnotized, and yet, at the same time, believe that he was perfectly helpless in the presence of the operator. If such an operator told such a subject that he would be hypnotized, such a subject would fully expect to be hypnotized in spite of his preference otherwise. In such circumstances hypnosis could be very easily induced.

Who Can Hypnotize? It is usually stated that any person can hypnotize. But this statement requires considerable modification. Many people have not the courage, nor the poise, nor the command of language, nor the patience, necessary to success. It is also customary to point out that some people

¹ See Hull, C. L., *Hypnosis and Suggestibility*, pp. 72-75.

have a commanding personality or an impressive physical presence, which is of assistance. This is undoubtedly true, although there is nothing in the technique of hypnotic induction which necessitates such factors of personality or physical presence. There is a lingering popular notion, doubtless a hang-over from the days of animal magnetism, that certain individuals are peculiarly endowed with the power to hypnotize. While this notion is still fostered by a certain class of sensational literature, it is utterly without scientific foundation.

Suggestion and Suggestibility. Many interpretations of hypnotism involve the psychology of suggestion; but in the process of suggestion itself there is nothing which can be pointed to as abnormal. It is a common occurrence of everyday life. Suggestion may be well defined as the uncritical acceptance of any cognitive process. This uncritical acceptance means, as Münsterberg¹ rightly emphasized, an attitude of belief or preparatory action. Suggestion should not be confused with the stimulus, as it so often is in popular thought, but should be confined to this uncritical acceptance. Janet stresses in suggestion the development of the idea to an extreme without let or hindrance by the self of the individual. This is but another way of saying that the usual critical mode of response is in abeyance, and of calling attention to an important effect of its failure to function. Sometimes a distinction is made between hetero-suggestion and auto-suggestion. In hetero-suggestion, the source of the cognitive process is from without the individual and hence it would start with a perception; in auto-suggestion, the source is supposed to be ideational.²

Suggestibility depends upon several factors or conditions. First (1) it depends upon the so-called range of consciousness.

¹ Münsterberg, H., *Psychology, General and Applied*. New York, Appleton, 1914. Chap. XVIII.

² For a thorough consideration of the definitions of suggestion see Young, P. C., "Suggestion as indirection," *J. Abn. & Soc. Psychol.*, 1931, 26, 69-90.

In relaxed states, when the range of consciousness is wide, there is greater ease of association so that an attempt at the production of a suggested response is likely to fail because of the criticism aroused through the richness of association. When the range of consciousness is reduced, as in continued close attention or in states of absent-mindedness, there is a corresponding limitation of association and consequent lack of criticism. Then is suggestibility heightened. Secondly (2) the possibility of producing suggested responses in any given case depends upon the directness or indirectness of the presentation. Sidis ably pointed out that, when the field of consciousness is broad and the subject correspondingly alert and critical, then must the presentation be very indirect or veiled. On the contrary, when the field of consciousness is narrowed and the subject consequently uncritical, then the presentation is the more effective as it is the more direct. It might be said that the directness of the presentation must vary with the breadth of the field of consciousness. Exceptions to this appear to occur where the suggested act is very simple and harmless, as are those used for laboratory experimentation on suggestion (falling forward, for instance).

The possibility of producing suggested behavior is dependent also (3) upon the prevailing attitude of the subject. McDougall has made much of what he calls "contrary suggestion." This is really a contrary attitude, an attitude governing attention and consequently behavior, which predisposes to the opposite of that which is asked, or demanded, or even hinted at by associates. Some persons seem to be habitually dominated by this contrary attitude, while others are but temporarily so dominated. The extreme opposite is to be found in the attitude of simple and ready acceptance characteristic of most children. This is the chief reason why children are so much more suggestible than their elders. It is also doubtless aided by their limited capacity for criticism. This acceptance attitude is to be found in varying degrees

in most adults. Those going to hear a famous orator or to consult a famous physician usually do so with the attitude of acceptance which predisposes them to suggested behavior.

Lastly (4), the health of the individual is a conditioning factor. Any condition which reduces the alertness of mind, limits or alters the flow of associations, will obviously predispose to suggestibility. Fatigue with its well-known effect upon associations, neurasthenic and psychasthenic states, as well as many of the conditions described in the chapters on the psychoses and the psychoneuroses, contribute in this manner to the suggestibility of the subject.¹

Theories for the Interpretation of Hypnosis. Perhaps the simplest of these is that (1) which explains the state entirely in terms of the psychology of suggestion. In the induction of hypnosis certain attitudes are first established which prevail during the course of the sitting and condition the content of the focal point of consciousness. After these attitudes are well established, the procedure of induction is such as to retract the field of consciousness, thus further heightening the suggestibility which had already been prepared for by the attitudes set up, and to imply the onset of a sleeplike state. This proceeds in favorable cases until the subject has only a highly retracted field of consciousness and that dominated by the attitude of willingness to do whatever the operator commands. Then the various phenomena producible in the hypnotic state may be explained in terms of the greatly heightened state of suggestibility established. In such a state the subject sees and hears only what he is told to see or hear, because the only possible content of the very retracted bit of consciousness remaining is that which the operator suggests.

¹ Individual differences in suggestibility distribute apparently according to the normal surface of frequency. There is some evidence for thinking that there may be a general factor of suggestibility. See Aveling, F. and Hargreaves, H. L., "Suggestibility with and without prestige in children," *Brit. J. Psychol.*, 1921-22, 53-75.

In such a state there can be no conflicting impulses and only the belief or acceptance reaction, unless the suggested act be such as to arouse a reaction so violent as to disturb the hypnotic state.

The experimental studies of recent years have shown beyond much question that in hypnosis there is ordinarily, and perhaps always, a marked heightening of suggestibility; but they seem not to have led the more critically minded to accept this as a complete interpretation of hypnosis.¹

Many have contended, and some apparently still believe, that hypnosis is (2) a form of sleep induced by suggestion. Bernheim strongly advocated this interpretation. McDougall² has argued that the state of the brain in both hypnosis and sleep must be one of general dissociation. Sidis thought he found evidence of an intermediary state between waking and sleeping, designated as hypnoidal, which he believed to be the human remnant of the animal resting state from which human sleep and hypnosis had both been differentiated.³ Some apparent support for this sleep theory may also be found in Shepard's⁴ study of sleep. His conclusions led to a theory of sleep as being domination by fatigue sensations to the exclusion of all else. Such a domination would involve a great retraction of the field of consciousness and hence appear to be much like hypnosis. Pavlov, on the basis of his well-known experiments on dogs, states that inhibition, sleep and hypnosis are one and the same.⁵ Inhibition he thinks of as a partial sleep, localized within very narrow limits. Sleep is a diffused and continuous inhibition. But hypnosis is a more limited

¹ Brown, W., "Theories of suggestion," *Brit. Med. J.*, 1928, 1, 251-255. Hull, C. L., *Hypnosis and Suggestibility*, pp. 391-393.

² McDougall, Wm., "The state of the brain during hypnosis," *Brain*, 1908, 31, 242-258.

³ Sidis, B., *An Experimental Study of Sleep*. Boston, Badger, 1909. Pp. 106.

⁴ Shepard, J. F., *The Circulation and Sleep*. Univ. of Mich. Pub., 1914. Pp. 83.

⁵ Pavlov, I. P., "The identity of inhibition with sleep and hypnosis," *Sci. Mo.*, 1923, 17, 603-608; *Conditioned Reflexes*, Lecture XXIII.

spread of inhibition, a spread which has extended only over certain areas that are usually active.

Other physiological studies (see section above), however, have not been so convincing on the identity, or even the similarity, of sleep and hypnosis. Some of them would point to the likelihood of sleep and hypnosis being physiological opposites. Psychologically they appear to differ in the attitudes controlling them. Those attitudes so carefully established in the induction of hypnosis, and which appear to prevail throughout the hypnotized state, are notably absent in sleep. An uncritical acceptance of the sleep theory of hypnosis would thus appear to be rash indeed, although it may be that some states or forms of hypnosis may approximate in certain of their features some of the states or forms of the conditions called sleep.¹

The use of the word sleep in the induction of hypnosis must not lead to confusion. It is now customary to tell the subject that the term sleep is used for convenience, but that he will not fall into a normal sleep. Janet reports the case of a woman who was very tired when he wanted to hypnotize her and instead she lost herself and fell into a normal sleep, for which she apologized afterward. The differences are too great and too certain to permit the acceptance of the sleep theory.

The explanation of hypnotic phenomena in terms of a peculiar conception of the subconscious as a self or especially endowed force (3) was once much more relied upon than it is today, although traces of it are met with. F. W. H. Myers, whose name is more often associated with psychic research, and Boris Sidis were active advocates of this conception. To these people the technique of inducing hypnosis was but the necessary procedure for releasing the powers of the subconscious, which, in the normal waking states, were to a greater

¹ Bass, M. J., "Differentiation of the hypnotic trance from normal sleep," *J. Exp. Psychol.*, 1931, 14, 382-399. Hull, C. L., *Hypnosis and Suggestibility*, chap. VIII. Kantor, J. R. and Davis, R. C., "Skin resistance during hypnotic states," *J. Gen. Psychol.*, 1935, 13, 62-81.

or less degree overshadowed by consciousness. Myers liked to think of the self in terms of his famous iceberg analogy, the submerged portions of which were the really dominating force for the movements of that which was visible or conscious. In this subconscious were supposed to be powers or functions long since lost to consciousness by automatization.

The theory that hypnosis is but an artificially induced hysterical state (4) recalls the long-standing argument between Charcot and his followers on the one hand and Bernheim and his associates on the other. Charcot, who was a specialist in anatomy and organic diseases of the nervous system, interpreted the hypnotic states which he saw in terms of what he knew. He sought for typical reflexes and other alterations of function on the supposition that the state which he was examining was like the organically diseased conditions with which he was familiar. He and his associates classified hypnotic states into three kinds: 1, lethargy; 2, catalepsy; and 3, somnambulism. The Nancy school, as the work of Bernheim and his associates is often termed, demonstrated that they could produce by suggestion all of these states which Charcot thought to be organic in origin. A long controversy ensued, ending eventually in the almost complete victory for Bernheim. It has since transpired¹ that Charcot never saw more than about twelve individual subjects and that these had long been practiced by various hypnotizers or by the older magnetizers.

Today the leading advocate of the pathological interpretation of hypnosis is P. Janet, although he is now presenting the argument in a somewhat modified form. It is necessary, he thinks, to distinguish between hypnosis, which is an artificially induced hysterical attack, in a subject already so predisposed, and those conditions of mind which are also, but unfortunately, called hypnosis, which are nothing more than heightened states of suggestibility. The introduction of either condition is aided by temporary conditions of weakened synthesis as the

¹ Janet, P., *Psychological Healing*, Vol. I, chap. IV.

consequence of exhaustion, toxic states, or drug effects. The claim that any normal mind can be hypnotized indicates that the claimant is confusing states of heightened suggestibility with states of genuine hypnosis. By a careful comparison of hypnotic states and hypnotic subjects with hysterical seizures and hysterical subjects he finds many identical characteristics. He finds that those subjects in whom hypnotic somnambulism may be produced have a history of other psychoneurotic symptoms; that subjects troubled by other diseases than hysteria, as, for example, epileptics, cannot be made to go into the hypnotic somnambulism any more than a normal mind; that the healing of hysteria eliminates the possibility of producing the hypnotic somnambulism and that the two states are so much alike it is possible to pass from one into the other.¹

The posthypnotic suggestion may be taken as a striking case in defense of Janet's hypothesis. There is amnesia for the instructions given. When the proper signal comes the subject is at once indifferent to all else, appears to be dominated by those instructions for which he had hitherto been amnesic, behaves in fact quite like an hysteric in a monoideic somnambulism. Similarity, however, is not to be mistaken for identity. Janet does not think of an hysterical attack and hypnosis as identical in all respects. The hypnotic state is but an artificially induced hysterical seizure. In its induction, attitudes are established which may not exist in the hysteric. These attitudes produce a rapport between the subject and the hypnotizer which is peculiar to hypnosis. He believes it necessary then to differentiate between states of heightened suggestibility, hypnosis and hysteria.

Moll (5) in his classical summary of the literature on hypnosis contends that any uniform explanation of hypnosis is impossible because of the variety of states involved. This is in partial accord with the differentiation which Janet is now making. Moll proceeds then to point out certain character-

¹ Janet, P., *Major Symptoms of Hysteria*, pp. 114-115.

istics of normal human behavior which are startlingly similar to hypnotic phenomena. Everyone, he says, is more or less prone to be influenced by others, that there is everywhere and always much belief without logical thought, that psychological and physiological processes tend to appear when people intently expect them, that when a person has been effectively and agreeably influenced by another person once it is much easier for such a person to be so influenced by that person subsequently, and that everyone is not only prone to influence by others but that everyone is more prone to the influence of certain other people. These, he hints, may in some fashion be so altered as to manifest themselves in the abnormal manner we know as hypnosis.

The psychoanalysts (6) flatly deny the adequacy of the psychology of suggestion presented above. For them the term suggestion designates at once two processes or aspects. It refers to what they call verbal suggestion, which is the form of suggestion so far described; but it also includes what they designate as affective suggestion. By affective suggestion they indicate the emotional accompaniment and motivation of the verbal suggestion. Behavior patterns carried over from childhood have a conditioning effect upon the reactions of most adults. In their interpretation of hypnosis the psychoanalysts stress especially the habits of affective submission to the parents and the many unpleasant experiences of imperfect adjustment to life, the unresolved conflicts. The more influential these are in the adult the less healthy is the individual; if they are sufficiently influential the individual is a psychoneurotic. The procedure of verbal suggestion releases the childish affective habits and the emotion of these unresolved conflicts. It is this energy which motivates the phenomena of hypnosis. The vast difference between individuals in the nature of this background accounts for the differences in the behavior of subjects when the procedure for the induction of hypnosis is the same. This comes very close to saying that all people who

are hypnotizable are to a greater or less degree psychoneurotic, an approximation to Janet's contention and the still older Charcot school. This the psychoanalysts recognize and admit.

It should be further understood that the psychoanalytic discussions of suggestion and hypnosis primarily concern the function of what they call transference. This is a form of displacement, or, in other terms still, the substitution of another object or person for that which has hitherto been the center of affection. When the hypnotizer by the production of hypnosis sets aside the inhibiting or normally controlling factors in the life of the subject and releases the pent-up inner life, there is a substitution of himself for the person or persons about whom the emotional life formerly centered. Thus the emotion is said to be transferred to himself. Where there has been a narcissistic fixation, the hypnotizer becomes a substitute for the ego-ideal. If, however, the subject has but imperfectly outgrown the childish habit of submission to the parent and has but partially repressed the longing to live in such childlike submission to a strong and dominating personality, then in hypnosis the hypnotizer takes the place of the parent and the subject's pent-up longing for submission finds free expression, or transference, as it is termed. So, too, it is supposed that the hypnotizer may take the place of some person around whom the emotional conflicts of the life of the subject have been centered. By such means do they explain the rapport between the operator and the subject and not in terms of preëstablished attitudes as has been presented in the discussion of other theories above.

In this scheme of interpretation, the hypnotizer himself and what he does is of relatively little significance; the explanation of the behavior of a given subject in hypnosis is to be found rather in his own psychological past. The fact that large, well-poised, dominating personalities can as a rule more readily hypnotize than can weak, shrinking personalities is, according to this theory, due to the resemblance of such personalities to

that which the parent seemed to be to the child. Such personalities can easily serve as substitutes, or surrogates, and so the more readily bring about the transference of hypnosis.

The history of hypnosis gives ample support to the assertion that the hypnotizer can never be certain into what state his technique may throw the subject, nor of what nature the response to any given suggestion may be. In the light of the psychoanalytic theory, interpreting in terms of the emotional background of the subject, these unexpected and often undesired responses of the subject can be explained far better than in terms of unnoticed suggestions or poor technique of induction and control.

That the hypnotized subject is not completely submissive to the hypnotizer, that improper and indecent suggestions will be resisted even to the point of waking, is explained by the psychoanalysts through the assumption of parts in the ego and super-ego. Even in the deepest hypnosis a portion of the ego is assumed to be always watchfully on guard. It is this portion of the ego which interferes, rouses the subject if necessary so that the complete ego may come into control, whenever the improper or indecent is suggested by the hypnotizer.¹

Are Crowds Hypnotized? The condition of a crowd under the spell of a skillful orator, or the behavior of a mob under a frenzied leader, bears such an outward resemblance to hypnosis one often hears it said that the crowd is hypnotized. Whether or not this is to be approved depends first of all upon the definition of hypnosis accepted. If one is to approve Janet's distinction between states of heightened suggestibility and hypno-

¹ For presentations of the psychoanalytic theory in English see the following: Ferenczi, S., *Contributions to Psychoanalysis*. Boston, Badger, 1916. Chap. II. Freud, S., *Group Psychology and the Analysis of the Ego*. New York, Boni and Liveright, 1922. Pp. 134; *A General Introduction to Psychoanalysis*. New York, Boni and Liveright, 1920. Chap. XXVIII. Jones, E., "The nature of auto-suggestion," *Brit. J. Psychol.* (Med. Sec.), 1923, 3, 194-212; "The action of suggestion in psychotherapy," *J. Abn. Psychol.*, 1911, 5, 217-254. Schilder, P. and Kauders, Q., *Hypnosis*. Nerv. & Ment. Dis. Monog., No. 46, 1927. Pp. 118.

tism proper, then the individuals composing a crowd would as a rule be in states of heightened suggestibility, although in certain instances some few individuals might be thrown into the artificial state of hysteria which Janet has called hypnotism proper. Certainly many of the items listed as characteristic of hypnosis are to be found in crowd behavior. If the speaker comes from a distance with the prestige of a great reputation, many of his auditors come with the attitude of expecting to be greatly influenced by him. The various items preceding the speech itself assist in the building of submissive and acceptive attitudes. Then the trained voice and mode of presentation of the speaker produces the continuity of attention and the retraction of the field of consciousness, with the correlative heightening of suggestibility, which are again similar to the procedures of hypnosis. In the earlier parts of an address the skilled speaker makes his suggestions in an adroitly indirect manner; but as the audience becomes more and more fixated upon him and thus more and more suggestible, his suggestions become more and more direct, following the law of Sidis.

Ordinarily this uncritical acceptance of the speaker's assertions, resulting in much surprise and self-criticism afterward, when the individuals later think the matter over in the relaxation of their homes, is about the limit of crowd suggestion phenomena. Examples of convulsions, cataleptic states, tics, tremors, amnesias, etc., now familiar as hysterical phenomena, may be seen in some crowds, but as a rule only in a few individuals within the crowd. The descriptions available of the famous Kentucky revivals reveal many instances of such.¹ The people came with expectancy and the circumstances developed a severely aggravated emotional excitement. The same may be seen today in the faith-healing meetings of certain contemporary religious cults. The subjects are prepared for days before the climactic session occurs so that by

¹ Cleveland, Catherine C., *The Great Revival in the West*. Chicago Univ. Press, 1916. Pp. 215. Davenport, F. M., *Primitive Traits in Religious Revivals*. New York, Macmillan, 1905. Pp. 323.

the time they appear in the "healing line" their emotions have been fiercely aroused and their capacity for inhibition greatly weakened. They go up expecting to be overcome by the "power"; and then the trained observer will see the effects of expectancy, retraction of the field of consciousness, and the eventual release of pent-up emotion in hysterical convulsions, catalepsy, and the like.¹ Every suggestion is bent in the direction of producing this state and the belief that when they come out of it they will be better or entirely cured of whatever ailed them. Evidently some do come out of the state with amnesia for their former complaints, or perhaps a former hysterical contraction or paralysis has been removed by the seizure, or they may quickly develop an active defense mechanism of denial. Thus is the list extended of those who claim to have been healed by the "power."

In some such meetings, occasional individuals not in the healing line, but scattered here and there through the audience, "get the power," or are thrown into a hysterical seizure by the circumstances of the meeting. These are doubtless hysterics, poorly synthesized and highly suggestible to begin with. In terms of the Freudian theory, there is in the crowd the same substitution of the leader (God, Jesus, or the speaker) for the ego-ideals of the individuals composing the crowd as there is in hypnosis; but, in the crowd, there is an identification of the individual ego with the other individuals of the crowd, hence a more complete loss of self-control than exists even in hypnosis.

Therapeutic Values. In the days of Mesmer and the early history of hypnosis, the state itself was supposed to have its therapeutic value. In the light of present knowledge, however, it is evident that beneficial results, where they were obtained, must have been due to suggestions unnoted or to the attitudes of expectancy with which the subjects went into

¹ This is the usual interpretation; but careful competent observations are unfortunately lacking. It is possible that these states might turn out to be cataleptic instead.

the hypnotic state. Today, wherever hypnosis is used at all for therapeutic purposes, it is looked upon as a means of producing a condition in which certain suggestions may be the more effectively presented or established, or else as a means for the discovery of dissociated or repressed material.

Writers who have not been much influenced by the psychoanalytic movement generally agree that the chief use for hypnosis is to be found in the treatment of the psychoneuroses. They claim that this state of heightened suggestibility is an aid to the discovery of dissociated material and in the removal of obsessions and phobias and compulsions. Such distorted thinking is, they say, more amenable to treatment by hypnotic suggestion than are other states. Sexual perversions have been aided by means of hypnosis. Through its aid the establishment of more desirable habits has been hastened. So, too, has the breaking up of drug habits been assisted, always recognizing, of course, that such a breaking up is, in the last analysis, but the establishment of other habits. Hysterical phenomena would presumably also be amenable to treatment by suggestion. Most of the nonpsychoanalytic literature assumes or states that hysteria can be helped, if not cured, by hypnosis, although with some reservations. Moll, however, insists that hysteria is the least responsive to this type of treatment because of some peculiarity of the hysterical organization. He found that hysterical symptoms might be removed by hypnosis, but that such removal did not constitute a cure. It might be merely the elimination of one symptom which would be quite promptly replaced by another.

Organic diseases are obviously not amenable to the suggestive treatment possible through hypnosis. It must be kept in mind, however, that organic diseases are often, if not usually, accompanied by emotional distress and fatigue or exhaustion. There may easily appear then with them all of those conditions which Janet has described as due to a weakened synthesis; and, consequently, hysterical phenomena may be superposed upon the organic syndrome. If the organic disease

occurs in a person whose diathesis is definitely hysterical, the probability of the admixture of hysterical symptoms is very greatly increased. Where there is such a superposition of psychoneurotic conditions, hypnosis might be of assistance, but only for the relief of the psychoneurosis. While such a relief might indirectly affect the organic condition, that cannot be interpreted as a direct effect of the hypnosis upon the organic disease.

The psychoanalytic school condemns the use of hypnosis even for the psychoneuroses. Freud says that the hypnotic therapy is but a cosmetic which leaves the patient fundamentally unchanged, while the psychoanalytic method is comparable to a surgical interference which removes the cause of the disturbance. In making curative suggestions in the hypnotic state the physician is from this point of view but trying to combat the disease motivation by nothing more than his own authority. There is no consideration of the emotional background of the symptoms but merely an effort to bulldoze them into ineffectiveness. Pfister has made the best summary of the psychoanalyst's objections to hypnosis.¹ He argues that hypnosis is not uniformly successful, is not as penetrating as psychoanalysis, that it does not bring about the re-education which psychoanalysis does, and that the results of hypnosis are less permanent. Psychoanalysts generally protest that hypnosis is merely transference of the affect to the hypnotizer and as such is inadequate if not positively dangerous. The danger lies in the possible fixation of the affect upon the hypnotizer. In every psychoanalysis there is a stage when the affect is transferred to the physician or analyst, but the nature of this transfer is known and is looked upon as merely a stage in the process. The completed psychoanalysis eventually carries the transference from the physician outward and leaves the individual reoriented and readjusted in the world of reality.

Hypnosis and the Phenomenal. The popular notion that subjects in hypnosis can be made to do that which they never

¹ Pfister, O. R., *The Psychoanalytic Method*, p. 437 et. seq.

learned may be safely scouted. If the nerve patterns necessary to a skilled act are not present in the subject no hypnotic suggestion can possibly produce them. Hypnotism might, as is true of drugs, remove certain blocking inhibitions and thus permit an expression of which the individual was incapable in the normal state. But this is as near the miraculous as it can come.

Dangers of Hypnotism. The older statements concerning the dangers of hypnosis are to be both emphasized and discounted. Many believe that great harm can be done by its indiscriminate use. The itinerant performer whose only interest is in the money he makes is not likely to investigate the psychological background of a subject before making use of him, even if he were competent to make such an investigation. He may thus readily find in his hands hired or volunteer subjects who are hysterics or hysteroids and, by lack of attention to important details, leave them in a worse state of disorganization than he found them. It also appears possible that a genuine state of hysteria may be produced where before there was but the mere possibility of such. Many drugs used in medical practice are poisons and in untrained hands, recklessly used, may be very dangerous; but in trained hands, skillfully used, they may be valuable. The same may be said of hypnosis in so far as the psychoanalytic criticisms are neglected. If the psychoanalysts are correct, then, even for therapeutic purposes, it is dangerous.

It has already been pointed out in another connection that the moral dangers of hypnosis are comparatively slight. The hypnotized subject cannot be made to commit a crime unless it is the sort of thing which finds little opposition in his established habits and emotional reactions. The often alleged "weakening of the will" as a consequence of hypnosis is more difficult to answer. If the psychoanalysts are correct, then a hypnotically established transference which becomes fixated would certainly result in a diminution of that which is com-

monly called independence or self-control. If hypnotism be finally interpreted as merely a state of artificially induced hysteria or heightened suggestibility, either or both, then in the light of our knowledge of the ease with which habits are formed it would seem quite possible for the system to establish a habit of easy reduction of synthesis. This would certainly be undesirable; and the experimental studies of recent years point to the probability that hypnotic suggestion behaves like a habit.

On the other hand, there is a mass of argument and evidence to controvert the statements of dangers to be found in hypnosis, even in oft repeated hypnotization. One author doubts most of the alleged dangers of hypnosis and this is based on experience with many thousands of hypnotic trance states and the hypnotization of several hundreds of subjects.¹

Perhaps both those who argue for and those who contend against the dangers of hypnosis may be right. It has been indicated above that there may be different kinds of hypnosis; and it is certain that there are great differences in personality organization. There are different techniques for the induction of hypnosis; and there are a variety of phenomena produced in the hypnotic state. It is quite conceivable that some of all these, or some combinations of them, may be bad for the subject so treated; while it is equally possible that others, or other combinations, might be quite harmless. In the light of current knowledge, or current lack of knowledge, positive assertions either way seem premature.²

¹ Erickson, M. H., "Possible detrimental effects of experimental hypnosis," *J. Abn. & Soc. Psychol.*, 1932, 27, 321-327.

² The author has not considered the phenomena commonly termed animal hypnotism proper material for inclusion in this chapter. Those desiring will find presentations of the subject through the following references: Hoagland, H., "The mechanism of tonic immobility (animal hypnosis)," *J. Gen. Psychol.*, 1928, 1, 426-447; "On the mechanism of tonic immobility in vertebrates," *J. Gen. Physiol.*, 1928, 11, 715-741. Pavlov, I. P., *Conditioned Reflexes*, Lectures XVI and XXIII.

SELECTED REFERENCES

- Babinski, J., "Hypnotism and hysteria," *J. Nerv. & Ment. Dis.*, 1892, 19, 383-395, 494-511, 584-598. (Presents the Charcot-Bernheim controversy.)
- Babinski, J., "My conception of hysteria and hypnotism," *Alienist and Neur.*, 1908, 19, 1-30.
- Bernheim, H., *Suggestive Therapeutics*. (Trans.) New York, Putnam, 1899. Pp. 420.
- Binet, A. and Féré, C. S., *Animal Magnetism*. New York, Appleton, 1888.
- Bramwell, J. M., *Hypnotism* (3rd ed.). Phila., Lippincott, 1930. Pp. 480.
- Hull, C. L., *Hypnosis and Suggestibility*. New York, Appleton-Century, 1933. Pp. 416.
- Janet, P., *Psychological Healing*. New York, Macmillan, 1925. Vol. I, part II.
- Moll, A., *Hypnotism* (4th ed.). New York, Scribner, 1909.
- Podmore, Frank, *Modern Spiritualism*. London, Scribner, 1902. Vol. I, chaps. IV, V, VIII.
- Prince, Morton (Ed.), *Psychotherapeutics*. Boston, Badger, 1910. Pp. 204.
- Schilder, P. and Kauders, O., *Hypnosis*. Nerv. & Ment. Dis. Monog. No. 46, 1926. Pp. 118.
- Sears, R. B., "An experimental study of hypnotic anesthesia," *J. Exper. Psychol.*, 1932, 15, 1-22.
- Sidis, Boris, *Psychology of Suggestion*. New York, Appleton, 1898. Pp. 386.
- Strickler, C. B., "A quantitative study of post-hypnotic amnesia," *J. Ab. & Soc. Psychol.*, 1929, 24, 108-119.
- Tuckey, C. Lloyd, *Treatment by hypnotism and suggestion* (7th ed.) London, Bailliere, 1921. Pp. 427.
- White, M. M., "The physical and mental traits of individuals susceptible to hypnosis," *J. Ab. & Soc. Psychol.*, 1930, 25, 293-298.
- Williams, G. W., "Suggestibility in the normal and hypnotic states," *Arch. Psychol.*, 1930, No. 122. Pp. 83.
- Young, P. C., "An experimental study of mental and physical functions in the normal and hypnotic states," *Amer. J. Psychol.*, 1925, 36, 214-232.
- Young, P. C., "Hypnotism," *Psychol. Bull.*, 1926, 23, 504-523.
- Young, P. C., "A general review of the literature on hypnotism," *Psychol. Bull.*, 1927, 24, 540-560.
- Young, P. C., "A general review of the literature on hypnotism and suggestion," *Psychol. Bull.*, 1931, 28, 367-391.

CHAPTER XVII

DREAMS

RELATION TO COURSE OF SLEEP, CONTENT OF, BY EXPERIMENTAL STIMULATION, SPEED OF, RELATION TO WAKING CONSCIOUSNESS, ABSURDITY OF DREAM CONTENT, FORGETTING OF, HALLUCINATORY NATURE, TYPES OF (PREMONITORY, PROPHETIC, PRODROMIC, COLLECTIVE, KINESTHETIC, PARALYSIS, OF THE BLIND, OF THE DEAF, RECURRENT, NIGHTMARE, OF THE DEAD), THEORIES, INTERRELATION OF THEORY, DAY-DREAMING, BOVARISM, DELIRIUM, DREAMS AND PSYCHOSIS, DREAMS AND PSYCHONEUROSIS.

Few subjects in psychology have been more extensively considered than this. So far as is known man seems to have been observing dreams and speculating on their nature ever since man was man. It cannot be said, however, that as a consequence of this long-standing interest our knowledge of the psychology of dreams is proportionately great. The truth is that we are still very much in the dark about most of the problems involved. Experimental work on dreams by either objective or introspective methods is, for obvious reasons, exceedingly difficult.

As a consequence of the psychoanalytic movement and the growth of psychiatry, the last twenty-five years has witnessed a marked revival of emphasis upon the importance of having a more adequate psychology of dreams. The importance of understanding the significance of their content and motivation for the light such information may throw upon the life adjustments of the individual has been widely stressed. These influences have directed attention rather more toward the theoretical and therapeutic aspects than they have toward what

might be termed a general psychology of dreaming. Nevertheless, for the student of abnormal psychology, the consequence is a vast literature much of which is of considerable importance.

Relation to the Course of Sleep. Whether dreams pervade all of the sleep period or only certain portions of it remains an unsolved problem. Systematic recording of dreams results in data strongly favoring the latter possibility. Calkins and Sanford many years ago made one of the few careful studies of this problem and found that about three-quarters of their dreams occurred after four o'clock in the morning. Their method was to provide themselves with the necessary conveniences for recording and then to retire with the intention of waking and recording the nature and time of such dreams as appeared. The results are in conformity with the course of the normal sleep curve, with the greatest number of dreams indicated when sleep is most shallow. More recently Berrien, with a somewhat better method, found that the number of dreams fell off to the third hour of the sleep period after which it rose steadily. By the fifth and sixth hours the dream frequency was greater than for the first hour.¹

It may well be argued that results obtained by any of the methods here used are inconclusive because the subjects could obviously report only the dreams which disturbed sleep to the point of waking or which could be recalled upon waking. Perhaps there were as many dreams in the other parts of the sleep period but the condition of the subjects prevented their record or their recall. Some psychologists have even argued that sleep is never dreamless. No method has yet been devised by which the problem can be satisfactorily attacked.

Content of Dreams. The content of dreams has been studied by both the introspective and the questionnaire methods. Many years ago Bentley presented a most carefully prepared

¹ Berrien, F. K., "Recall of dreams during the sleep period," *J. Abn. & Soc. Psychol.*, 1930, 25, 110-114. Calkins, M. W., "The statistics of dreams," *Amer. J. Psychol.*, 1892-93, 3, 311-343.

program for the adaptation of the introspective technique to dream problems. Unfortunately it has not been sufficiently used. He and his students found visual and auditory imagery most frequent.¹ Colors appeared in the visual imagery occasionally but gray imagery was far more common. Unpleasant dreams appeared about twice as often as pleasant. Thinking they found to be seldom present and ineffective. Other studies of a similar nature confirm these results on the whole. Other forms of imagery are reported less frequently, some so infrequently as to have raised the question of their appearance at all. But it is probably safe to say that any form of imagery may appear in dreams, and that the relative frequency of the different kinds of imagery bears a fairly direct relation to the use of imagery in waking life. The only difference at present indicated with any likelihood of certainty is that colored imagery is much less frequent in dreams than in waking life.

The ideational material aroused in the dream is either the reproduction of former experience or is constructed after the manner of constructive imagination. The range of reproduction is notable. Material is frequently reproduced in dreams which the dreamer could not by any effort voluntarily recall. Instances are numerous reported of dream content which the dreamer could not believe to have come from the past, but which was subsequently proved to have done so. There is in this something similar to the hypermnnesia of hypnotism, automatic writing and crystal gazing. Faint remnants of long passed impressions seem arousable when the brain is not too inclusively active.

The questionnaire studies have gathered much more data but are subject to many errors of observation and report. Nevertheless, they are worthy of consideration. Kimmins² in an elaborate study of many thousands of dreams finds a

¹ For an interesting report of colored dreams see Stiles, P. G., *Dreams*. Cambridge, Harvard Univ. Press, 1927. Pp. 80.

² Kimmins, C. W., *Children's Dreams*. London, Longmans, 1920. Pp. 126.

number of indications of change of content with age. Dreams of fairies are most frequent in earlier childhood, wish fulfillment dreams and fear dreams come into prominence in later childhood, while adolescence shows a great broadening of the scope of dream content. The social condition of the child clearly influences the content of the dream. Poor children and orphans dream more of toys and home life. All such studies reveal what seems to be the influence upon dreams of fear, anger, desire for revenge, and other desires. Delinquent children confined in institutions dream much of home, and convicts behind prison walls dream of life outside.¹

Dreams by Experimental Stimulation. A favorite method for the study of dreams has been to determine the effect of some particular stimulation upon their content. That dreams may be so influenced has been clearly demonstrated. Subjects have been instructed to retire with a clove on the tongue, or to gaze at certain colors just before closing the eyes finally, and to report in the morning the content of all recallable dreams. When compared with the normal content, the increase of taste and smell and color imagery has been accepted as the consequence of the special stimulation. Cubberley² sought to obtain the effects of tensions of the body surface upon dream content and resorted to very slight stimuli. For tension he stuck a bit of gummed paper on the surface of the skin, and for relaxation he rubbed oily substances into the skin. In several hundred experiments he found that even such slight stimuli clearly influenced the dream content. Less carefully conducted experiments have produced similar results. A subject pinched on the neck while asleep and subsequently aroused reported dreaming of a blistering plaster and the family phy-

¹ Blanchard, P., "A study of subject matter and motivation of children's dreams," *J. Abn. & Soc. Psychol.*, 1926, 21, 24-37. Selling, L. S., "Effect of conscious wish upon dream content," *J. Abn. & Soc. Psychol.*, 1932, 27, 172-178.

² Cubberley, A. J., "The effects of tensions of the body surface upon the normal dream," *Brit. J. Psychol.* (Gen. Sec.), 1923, 13, 245-265.

sician of his childhood. Drops of water falling on the forehead of a subject produced a dream of Italy, perspiration and the drinking of wine. The disturbance of the alarm clock is a well-known producer of dreams. Often these dreams in some fashion involve the sound of bells.¹

Speed of Dream Thinking. This has been a curiously fertile topic for discussion. Many years ago Maury related a very long dream which concerned alleged personal experiences of the French revolution, all of which occurred in the moment between an accidental blow on the neck and waking. He was under observation at the time and so the nature of the blow was witnessed and the promptness of waking.² How so much could be dreamed in so short a time was puzzling. Other dreams of similar temporal nature were brought to light. Theories ranged from a frank acceptance of a much greater speed for mental processes in dreaming to the insistence that the dream appeared as a picture or a brief series of pictures which, when reported, appeared illusively long in time. While it was subsequently shown that this particular dream of Maury's was not reported for several years after its experience, and consequently much endangered by the familiar falsifications of memory, the problem remains clear. Is dreaming much more rapid than waking thought? Woodworth,³ following a suggestion made by Egger, recorded the imagery of waking association in a given period of time and then counted the items. He found that, far from being slower than dream life, waking associations were at least as fast if not faster than the much-discussed Maury guillotine dream. Anyone performing the simple experiment of recalling the content of thought for

¹ In an ingenious series of studies, Klein has produced what he believes to be comparable dream phenomena by experimental stimulation in a lethargic state of hypnosis. See Klein, D. B., "The experimental production of dreams in hypnosis," *Univ. of Texas Bull.*, No. 3009, 1930. Pp. 71.

² A convenient translation of this may be found in Freud's *Interpretation of Dreams*, p. 21.

³ Woodworth, R. S., "Note on the rapidity of dreams," *Psychol. Rev.*, 1897, 4, 524-526.

even a brief period of time will be impressed by the amount of that which has passed through consciousness. While the problem was thus apparently solved, it was brought up again by Freud and used, as will be seen below, as a criticism of the older dream interpretations.

Relation to Waking Consciousness. The effect of waking upon dreams is not without significance. In fact, it is often a serious source of error in dream studies. It has been contended that no dreams are recalled except those which end in waking, even though for but a brief time. In other words, the dream and its recallability is a product of the emergence from sleep into waking. This has been contested and a decisive answer is not yet available. It is clear, however, that the content of dreams is much falsified by those familiar processes through which recall of events is always subjected to error. Thus in listening to the report of a dream by almost any person the possibility of such error must be recognized. The longer the time between the experience and the dream and the report or record of it, and the more frequently the story has been told, the greater is the likelihood of unintentional falsification. If it should turn out, as some think, that every dream appears as a picture or series of pictures, then the very description of these involves some inevitable alteration in order to mold the pictures into a presentable story. For the purposes of introspective analysis such alteration must be avoided. The best method seems to be that of quiet, passive retrospection as soon as possible after waking. By this means the dream reproduction is, presumably, most like the original. But it may be that the very processes of falsification and distortion are themselves essential features of the dream function, as the psychoanalysts think. Whatever be the conclusion concerning the psychological value of the falsifications by waking repetition, the fact of their existence should be kept in mind.

That dreams influence waking life seems to be well established, although by casual rather than systematic report. Some

people, children especially, are prone to confuse dream experience with waking experience. They recall as actual occurrences of waking life events which occurred in their dreams. In seeking a detailed history of the life of an individual where it is necessary to rely largely upon the individual's own recall, this source of error must never be overlooked. In the lives of psychoneurotics this confusion of dream past with waking past is often reported. The emotional accompaniment of a dream often carries over into the day following and serves to produce a mood of considerable duration. People who are superstitious and interpret their dreams by the old-fashioned symbolism of the dream books may have their subsequent conduct much affected by the content of dreams. Others not so simple-minded may have the general trend of thought or conduct conditioned by dream content. Where dreams are the expression of desires or even influenced by desires which the individual has not yet entirely admitted to himself in waking life, there the dream may be a significant incident in the development of a course of conduct.

Absurdity of Dream Content. The absurdity of dreams is one of their most obvious features. At least they are absurd in the light of waking thought. When the full range of association capacity is available then the dream content appears absurd; but in the dreaming state the range of association is peculiarly limited and as a consequence the dream does not appear to be absurd. The most ridiculous dream is experienced as a rule in a wholly uncritical manner. Of this much has been made by some authors. It has been argued that the powers of reasoning are in abeyance in the dream state. Others have insisted that this very suspension of reason is not only a setting aside of the limitations of conscious life, but is at the same time a release of subconscious powers of thought as different from as they are superior to waking reason. The scientific student will at once observe that this is taking a dangerous flight into fancy. It would be safer to say that the absurdity of the dream content

must be attributed to the factors which govern the range and course of association while dreaming.

Sometimes in the course of a dream there comes an awareness that it is all a dream. Often this is accompanied by a change of affect from the disagreeable to the agreeable. This awareness that the process is only a dream may indicate a partial awakening, or it may be merely a further complication of the dream content.¹ Perhaps it is both.

The curious selection of material for the dream has often been a matter of comment, and has been revived with much attention by the psychoanalysts. The day may be occupied continuously with matters of great moment, but the dreams of the night which follow are apparently of no consequence. Why such insignificant items should come up in the dream, when the waking life is filled with matters of great importance, is a problem. The explanation depends upon the theory for dreams which one adopts.

Forgetting of Dreams. It is a commonplace to remark that most dreams are forgotten, and that much even of the dreams we claim to recall has been lost. This is not to be wondered at. Events of waking life which are not well associated with other events are not easily recalled. If any event of waking life were as little associated with the other events of waking life, we should not expect to recall it with ease. And the conventions of society prohibit the prompt retailing of dreams as well as the discussion of them, with a consequent lack of repetition and attention. Hence they are mostly forgotten because they are ignored.

Hallucinatory Nature of Dreams. It has long been stated that dreams are excellent examples of hallucination. It is stated that the imagery of the dream is as vivid as sensory experience and that it is projected as are sensations. With the statement that dreams are hallucinations some now disagree. They argue that the imagery content of dreams is not nearly so

¹ See presentation below of the psychoanalytic theory.

vivid as it was once thought to be and that consequently we must abandon the notion of its being hallucinatory in nature. This quibble is the inevitable corollary of the vagueness in the literature as to what an hallucination is. The gradual recognition that much which was once thought to be hallucination, because it was supposed to be of a purely central origin, may actually have an obscure peripheral origin, has led many to say that perhaps all hallucination is really illusion. And the discovery that the course of dreams is definitely affected by sensory stimulation in sleep or while going to sleep has contributed to the illusory type of interpretation. In this book,¹ it has been contended that the real distinction between hallucination and illusion and allied phenomena is to be found not in the degree of intensity of the process but in the way the process is experienced. If the stimulus for the process is not apparent and if there is no recognition of the perceptive-illusory nature of the process, then it should be considered an hallucination. If the stimulus is not apparent and yet there be recognition by the subject of the lack of correspondence with the external situation, of the hallucinatory nature of the experience, then it is to be termed a pseudo-hallucination. While dreams are in process they are accepted, as a rule, as real. The experience is that of a perceptive process. Hence they may be termed hallucinations. But, after waking, the normal mind recognizes the subjectivity or central nature of the process, the unreality of it in other terms, hence it would be termed a pseudo-hallucination. There seem to be some exceptions. At times the dreamer is aware that it is all a dream. Such instances would be of the pseudo-hallucination type at the time of the experience. The stimulus for the process is never apparent to the dreamer, and would usually not be apparent even to a wide-awake observer.

Types of Dreams. Classifications of dream types are numerous and mostly futile. Certain kinds are for one reason or

¹ See chapter III.

another sufficiently distinctive or peculiar to require special comment. *Premonitory dreams* are those which leave the dreamer with a feeling of future significance, usually of a foreboding nature. Of course, this premonitory feeling may be in part attributed to a habit of belief in the significance of dreams. But such premonitory feelings occasionally occur to others. The same feeling is sometimes left by the experiences of waking life as well. It appears to be of the same nature as the "hunch" and the intuition, a very incomplete reasoning process the basis for which is never earnestly sought and is never completed by the processes which bring proof. If perchance some subsequent event is of direful nature, then the premonitory feeling seems justified and significant. The conclusion is a belief in the premonitory nature of dreams. If the outcome is otherwise the dream is forgotten.

The *prophetic dream* is supposed to indicate directly or symbolically some future event. Why the vast number of dreams are not prophetic and occasional dreams are, is not made clear by the adherents of this doctrine. Obviously the prophetic dream owes its popularity largely to tradition and to pervasive human tendency to recall a few positive cases and forget all the negative. Believers in prophetic dreams have a few remarkable instances of coincidence between dream content and subsequent events which they retail on the slightest provocation, thus contributing to their own conviction and far too often to that of others.

Prodromic dreams are in a vague way prophetic. Incipient stages of inflammation seem to be capable of arousing cerebral activity of the perceptive-illusory nature when the same degree of inflammation does not produce sensation or perception in the waking state. A man dreamed, for example, of being operated on for appendicitis, the incision being made in his back where the pain seemed to be. He awoke in much distress to discover that there had been no operation and apparently he was in good health. Later in the day an attack of lumbago did develop

which, as every one knows, is a pain in the back. The early stages of the inflammation had apparently begun in sleep and stimulated the dream, but not until the inflammatory condition became more aggravated did it disturb the waking consciousness.

Collective dreams have, in rare instances, been reported. Although rare, they are of considerable theoretical value. As the name indicates, they are instances of two or more people having the same dream at approximately the same time. The cases reported¹ are of considerable groups of people sleeping under approximately identical conditions who report having approximately the same dream. Soldiers hastily quartered in an abandoned building about which there was a local tradition of ghosts awoke in terror, telling much the same dream of the devil jumping on their chests. Doubtless the soldiers had picked up the story of ghosts from the local inhabitants and so retired with some trepidation. Crowded as they were, with insufficient ventilation, it is likely that many became oppressed at about the same time. This oppression served as a dream stimulus, which easily aroused the remnants of ghost stories that had been in mind upon going to sleep. Add to this the suggestibility of sleepy ignorant men and the phenomenon seems to be satisfactorily explained.

Kinesthetic dreams, as they are often termed, of levitation, soaring and falling, have long been a popular topic for discussion. Most people have experienced them in one form or another. It should not be assumed from the name that the three senses ordinarily indicated by the term kinesthetic (muscular, tendinous, and joint) are the only significant factors in these dreams. The quality of the experience almost certainly points to the involvement also of the static senses, ampullar and vestibular. It is the dream experience of suspension calmly in mid-air, or of gentle lifting into the air, or of soaring off smoothly or in great swoops, or again it may take the form of more or less

¹ See Manaceine, Marie de, *Sleep: Its Physiology, Hygiene, etc.*, p. 299.

rapid downward movement, sometimes straight as in falling, and sometimes in an inclined manner, as if combined in part with the soaring experience. This cannot readily be attributed to reproduction from the past. Comparatively few people even yet have had the actual experience of soaring, and the dream form is ancient.

In the early days of genetic psychology when it was dominated by the recapitulation theory some overenthusiastic devotees argued that these dreams were reverberations from the days when our piscian ancestors floated and swam through the water. Simpler explanations are now available. The studies of slow anesthetization¹ have revealed that pressure sensation early disappears and that after its disappearance the subject, although lying prone, has the experience of floating or levitation. Apparently then any condition which entirely removes the sense of physical contact with supporting bodies should result in the levitation consciousness. A person lying in bed motionless should become adapted to the pressure stimuli at all points of contact with the bed. Then any other disturbance arousing consciousness would inevitably involve the consciousness of levitation if the consciousness aroused were at all related to physical position. The rise and fall of the soaring experience seems to correspond to the rise and fall of the chest in respiration. The falling dream has been variously attributed to changes in heart action and blood pressure, the relaxation of the voluntary musculature, and to a gradual awakening from a soaring or levitation dream. In the latter case the full return of pressure sensations would end the fall, and it is true in spite of popular tradition to the contrary that many people do "strike bottom" at the end of the fall, some quite forcibly.

The *dream of paralysis*, or inability to move, usually ending in waking with horror, is attributable to a partial awakening prior to the return of general muscular tension. The dreamer images movement, may even desire movement, thus beginning

¹ See chapter XIX.

the will process. If the dream goes on without awareness of the fact that the body is not moving then there is no disturbance and no dream of paralysis; but if at such a time there is a partial awakening sufficient to bring awareness of the relaxed condition of the body, the lack of movement following the imaged and desired act, the result is the arousal of fear or terror and the full awaking. A dream has been reported of inability to speak. Upon full waking the dreamer found that he was sleeping with his mouth open, that the nasal passages were stopped by a cold and that the buccal mucous membranes were very dry. Speech under such circumstances was practically impossible.

Dreams of the blind have attracted attention because of their curious difference from the dreams of the normally sensed. Of course the *dreams of the deaf* are equally curious, although they have been less discussed. The outstanding features are necessarily the absence from the dream content of images which are the most frequent in normal dreams. Where such sensory defect is congenital there must be a total absence of dream imagery from that sense. Where the defect is adventitious, the imagery may or may not appear in the dream life. If the sensory loss is suffered prior to somewhere about the fifth to the seventh year, the imagery disappears; but, if the sensory loss occurs later than that, the imagery from that sense continues in the dream. Apparently the range and use of imagery in dreaming is roughly a duplicate of that of waking life. Wheeler found in his blind subject (Cutsforth) that dream life corresponded to that of waking.¹ Where more than one sense is defective the dream imagery is just so much more limited. This has been admirably described in the writings of Helen Keller.

Recurrent dreams are still a baffling problem. While they may not perhaps be always indicative of abnormality the tendency today is to think of them as so indicative. Certainly

¹ Wheeler, R. H., "Visual phenomena in the dreams of a blind subject," *Psychol. Rev.*, 1920, 27, 315-322.

they are to be noted often in the histories of psychoneurotics, and they will therefore be discussed more in detail below under the relationship of dream life to mentally diseased conditions. During the war, soldiers suffered much from recurrent dreams of hideous war experiences, often to such an extent as to prefer remaining awake as long as possible rather than to face the hideousness of sleep. Such dreams may recur many times the same night, or they may come regularly every night, or they may recur at longer intervals. There is evidence that some of these recurrent dreams are aroused whenever a certain pattern of sensory stimuli occurs, but it is equally evident that all recurrent dreams cannot be so explained.

Nightmare dreams are often of the recurrent variety, the content being approximately the same upon each appearance. It has been reported that a nightmare dream may be made to recur,¹ as are some recurrent dreams, by discovering the position (usually a cramped one) which serves to arouse it. Futile efforts have been made to distinguish between nightmares and night terrors. They are both disagreeable dreams which leave the subject in the throes of fear. They are likely to be recurrent, especially in children. Perhaps some instances of terrifying dreams may be, as G. H. Green has suggested, actually a part of a dream which would have ended pleasantly had the dreamer not been aroused from his sleep by the terrifying portion of it. Such cases would then be the interrupted realization of a wish.²

Dreams of the dead add but one additional feature of interest. After an intimate friend or relative has died dreams not infrequently include the dead person as living. This as an evidence of habit effect is not surprising. Later there may be confusion in the dreams between the memory pattern of the person as

¹ Bellamy, R., "The analysis of a nightmare," *J. Abn. Psychol.*, 1915, 10, 11-18.

² Greene, G. H., *The Terror Dream*. New York, Dutton, 1929. Pp. 126; "The problem of the terror dream," *Psyche*, 1924, 5, 129-137. See also chapter XIV of this book.

living, and the newer memory of his death. Dreams of living people as dying, or dead, or being killed, probably come in another category, and will be discussed below in the section on psychoanalytic theory.

Dream Theories. The standard theory for the interpretation of dreams current prior to the advent of the Freudian movement, and accepted today by those who eschew psychoanalytic psychology, is couched in terms of the general psychology of perception and illusion. The factual data concerning the nature of sleep point to some very marked change in the functional capacity of the brain. This is accepted as sufficient explanation for the limitation of the range of association, the lack of criticism in the dream, and for the absurdity of the dream. A process once started in a sleeping brain follows what might be called the path of least resistance, the course of free association, which ends either in waking or in fading to disappearance. This path of free association is recognized as not being altogether free, but as governed by no set attitude. There must be, however, the influences of recency, frequency, and intensity.

The initiation of the process is attributed to disturbing stimuli which force activity in some portion of the cerebral cortex. An example may be helpful. Suppose a person sound asleep on his sleeping porch. Sensory stimuli have been reduced to a minimum. All is dark and quiet and the subject thoroughly relaxed. The brain is in the physiological condition of sleep. Smoke from the smoldering remains of a bonfire next door is carried by a change in the wind across the porch and the sleeper. The olfactory membrane is stimulated rather strongly where it had been quiescent or adapted. The result is activation of the olfactory tract and the arousal of the cerebral processes of smoke perception. The stimulus continues to irritate and the cerebral activation spreads, arousing thoughts of fire, house-on-fire, fire alarm, fire engines, rescues, etc., until the sleeper is aroused. By the time the sleeper is awake the breeze may

have changed its direction and the smoke stimulus disappeared. Obviously such a theory for the explanation of dreams has been much supported by all the experimental work on the effect of sensory stimulation upon the dream content.

It must also be obvious that the sources of stimulation are not always olfactory. The moon shining on the eyes is a notorious cause for dreaming. Unusual noises, a bad taste in the mouth, cramped positions, cold from insufficient covering, even such little things as creases in the bedding, have all been identified as dream stimuli. Organic conditions may also disturb and stimulate, thirst, indigestion, disturbed respiration from insufficient ventilation, bladder distention, etc. Certain perseverations of activity from the evening before may be the cause of dreams. Activity of any form, which for emotional or other reasons has required close attention in a state of high tension for some time prior to sleep, seems not to subside at once but lingers to serve at least as a contributory factor to dream disturbance. The after effect of emotion appears to function in a similar manner. A depressing emotion of the day or evening may linger on, perhaps as a mood, and determine the nature of the thoughts aroused in a dream.

That emotional conditions involving the whole physiology of emotions may have a very definite effect upon dreams has been indicated in a most interesting case.¹ The condition of the patient was such as to call for treatment with pituitary extract. While under this treatment dreams were notably frequent and most pleasurable. In them there was the realization of many of the patient's hopes and desires. Later the treatment was changed to suprarenal extract and with the change came an apparently related change of dream content. Under suprarenal treatment the dreams were highly disagreeable, of terror and fear. The details of these dreams were forgotten, but the emotional effect was carried over strongly into waking life. With

¹ Finley, C. S., "Endocrine stimulation as affecting dream content," *Arch. Neur. & Psychiat.*, 1921, 5, 177-181.

the cessation of the endocrine stimulation the dream life dropped back to the normal.

Students of dream content have often concluded that many dreams present the realization in fantasy form of waking wishes. Children enjoy in their dreams the toys and the experiences they long for in waking hours. Delinquents detained in institutions dream of home. Convicts dream of the world outside their prison walls.¹ Whether these desires are aroused in the preceding day and then carry over into sleep as a perseveration, or whether they are aroused by free association from some sensory stimulus in sleep is not clear; but the desire as a stimulus for the dream is usually listed by even the extreme non-Freudians.

The *psychoanalytic theory* for the interpretation of dreams is couched in different language and presupposes a very different conception of psychology from that with which the average student is familiar. If the student has already mastered the foregoing chapters, he should be by this time fairly well acquainted with these differences. But that there are these very great differences in point of view and attack must always be kept in mind. Otherwise hopeless confusion of thought is the inevitable consequence. Another source of confusion lies in the many changes and variations of the psychoanalytic theory of dreams which have appeared. It is probably best for the student to acquire first the older conception, about as given in Freud's much-quoted volume entitled *The Interpretation of Dreams*. Then it will be easier to read both the older and the contemporary literature intelligently. Of course the newer variations must subsequently be included and evaluated in the light of the whole.

It is well at the outset to recall the tripartite conception of the psyche with which these authors worked. They thought of

¹ Blanchard, P., "A study of subject matter and motivation of children's dreams," *J. Abn. & Soc. Psychol.*, 1926, 21, 24-37. Selling, L. S., "Effect of conscious wish upon dream content," *J. Abn. & Soc. Psychol.*, 1932, 27, 172-178.

psychic life as existing in three phases or forms: consciousness, foreconsciousness, and the unconscious. Between the unconscious and the foreconscious was the censor, which actively repressed or kept out of consciousness all that was disagreeable. The nature of this censor or censorship was left until further study should bring understanding, but that there was some force which actively repressed the disagreeable, the psychoanalysts were certain. The foreconscious contained material which had not been forcibly repressed but which had been temporarily forced out of consciousness by the circumstances of life. Foreconscious material could be recalled upon occasion. All life, at least psychic life, moved according to the pleasure principle — toward the relaxation of tension, the avoidance of pain and the production of pleasure.¹ All psychic life or processes were thought of as dynamic, as endowed with energy which did things. Unconscious processes were dynamic and seeking an expression which the censor blocked. Only by some concealing change could they pass the censorship into expression. Such concealed expressions characterized all conscious life, but more especially so in dreams and the symptoms of the psychoneuroses. The term wish was very generally used to include instincts, impulses, desires, hopes, longings, and actual wishes. If the wishes were such as to lead to the disagreeable and unpleasant they were repressed. And if repressed they were, according to the theory, still seeking expression. The best opportunity for them to find expression was into consciousness during sleep, when the activity of the censor was to a considerable extent relaxed.

Thus it came about that *the dream was defined as the concealed expression of a repressed wish*. It is important to emphasize the term concealed in that definition. Far too often readers have hastily assumed that according to the psychoanalysts dreams were the expression of wishes and then, after taking a look at the absurdity of their own dreams, concluded

¹ See Freud's *Beyond the Pleasure Principle*.

that the theory itself was absurd on the ground that no sane mind could have wished for such silly things. They are the concealed expression of wishes, which is a very different matter.

With a full appreciation of this definition, it becomes immediately evident that the content of the dream, as we recall and relate it, is really but a small part of the whole dreaming activity. Behind the dream as we tell it there is much more below the censorship which we cannot recall. Thus there are two parts to the dream, that which is manifest and that which is latent. These two parts are termed *the manifest content* and *the latent content*. The reason why dreams appear to be absurd is because we recall only the manifest content, which is but a fragmentary portion of the whole. If one should record what a friend says while at the telephone, without any consideration of the pauses and of what was said at the other end of the line, it might appear nearly as absurd as the content of our dreams, as we relate them. But the activity behind the manifest content of a dream is, if anything, more complicated and influential than is the other end of the ordinary telephone conversation.

From the foregoing it follows that the discovery of the latent content of the dream is an indispensable step in its explanation. This is obtained by the procedure known as free association. In a state of complete relaxation, usually lying down and with the eyes closed, and under instructions to permit anything and everything to come to consciousness, no matter how trivial or personal or disagreeable it might be, and not only to consciousness but to expression, so that a record may be made of it, the dreamer is stimulated by the mention of now one and now another portion of the dream. In response to the stimulus the subject of analysis lets his mind run uncontrolled. The obvious object of the procedure is to avoid as completely as may be possible the repressing activity of the censor. Out of the record of these free associations the latent content is subsequently pieced together. This piecing together and discovery of the

latent content is said to require no little ingenuity and much training.

With the latent content of many dreams determined and the comparison of it to the corresponding manifest content presented, it has been discovered that there are certain rather stereotyped forms of distortion or concealment by which the drives of the unconscious achieve expression in the conscious. These are technically known as condensation, displacement, dramatization, and secondary elaboration, and are frequently referred to as the *mechanisms of the dream work*. They must be clearly understood, not only for the comprehension of dream theory, but because they have been so widely used in the interpretation of many other forms of human behavior. *Condensation* means that any single item in the manifest content of the dream may be composed of parts of several ideas or wishes in the latent content. Freud tells of finding the word "norkdal" in the manifest content and discovered that it was the condensation of Nora and Ekdal, two of Ibsen's well-known characters, which figure prominently in the latent content. The curious term "uclamparia" was found to be a condensation of eucalyptus and malaria, with very elaborate meanings associated with each of these words. The extent of such condensations can be indefinite. Not two but many features may be condensed into one. A person in the manifest content may really represent several different people in the latent content. *Displacement* concerns the attachment of the affect. Every wish is composed, not only of its ideational content, but also of its affective. This affect is thought of as the energy of the wish. In the unhampered expression of the wish in consciousness the affect centers upon the more significant items in the ideational content. But under repression the affect in pushing for expression may become shifted or displaced to associated, although originally far less significant, ideas. Thus an idea in the manifest content may be of significance only as it happened to be slightly associated with the really significant idea in the unconscious, just

sufficiently associated so that the affect could be displaced to it.

The extremely misleading nature of the manifest content becomes more and more apparent. What seems to be an important item in the manifest content because of its emotional accompaniment may be but a symbol or surrogate for the really significant item. And this displacement may be combined with condensation. The affects of two or more wishes may each be displaced to subsidiary ideas and these subsidiary ideas, now apparently important because of their displaced affect, may be condensed into one. So an item in the manifest content which is very intense may by its very intensity lead the interpreter to suspect both the effects of condensation and displacement.

Dramatization and secondary elaboration are in a way different from condensation and displacement. They function differently. They are not the consequence of conflict but rather the consequence of mental limitations. Dreaming is largely in concrete visual images, hence these wishes must take on the form of pictures in finding expression in dream consciousness. The result is a further concealment, so far as the investigator is concerned, of the true meaning of the dream. Here, it will be observed, it is a concealment for the investigator or analyst, not in order to escape censorship. In the process of becoming conscious in that which is about the only form possible to dream consciousness a change takes place from the wish or desire form into what might be called a *dramatization* of the wish or desire. Thus that which in the unconscious is abstract takes on a concrete appearance in consciousness. Unless the analyst is aware of this change, he may be led much astray. As an example of this, Freud tells of a dream in which he seemed to be in a hotel. It was raining and the roof leaked; as the storm continued the leaking became so bad that eventually his whole room was flooded with water. Upon analysis this proved to be but a dramatization of the idea in the unconscious of superfluity. *Secondary elaboration* is the consequence of conscious-

ness making some sort of coherent story out of that which is largely a disconnected set of pictures. It is like the process of perception, which pieces out the fragmentary presentations of sense with traces of past experience, with memory material, in order to make a full and coherent presentation. The material for this secondary elaboration is the material in the foreconscious. Much of this elaboration comes in the recall and telling of the dream. The best intentioned person, in order to relate his dream, will inevitably pick up related and easily relatable material from the foreconscious as a means of making a coherent story. It is the same process of falsification with which all students of testimony are familiar.

The *wish which motivates the dream* is also as a rule a source of complication. Freud and his early associates did not insist that absolutely all dreams underwent such a process of distortion as that just described. They recognized that some dreams, perhaps many dreams, of childhood especially, were direct wish fulfillments. As experience and the psyche become more complex and differentiated, the concealed form of presentation becomes more frequent. But no wish repressed from waking life of the day before is by itself thought to be sufficient to produce a dream. Such a wish, rejected by consciousness and repressed into the unconscious, combines with some of the old repressed drives of the unconscious always seeking expression and, thus reënforced, can produce a dream. This motivation of the dream by more than one wish is in the language of psychoanalysis known as *over-determination*. The wish incitements arising from organic needs during the night may also be factors in the over-determination which produces a dream. Some wishes are not quite strong enough to produce a dream even when so reënforced. They can almost achieve it but not quite. They are, as it were, at the very door of consciousness ready to come in. Hence at the moment of awaking they come immediately into consciousness. This is the psychoanalytic explanation for dreams in shallow sleep and upon being aroused.

The dreams of nudity, or of appearing in public in scanty and inappropriate clothing, the psychoanalysts use as examples of the regressive or infantile nature of dreaming. These are but expressions again of the childish delight in exposure. This seeking for exposure is thought to be allied to the sex instinct and is referred to specifically as exhibitionism, or the exhibitionistic instinct, which is one of the sex group. These dreams, as they appear in the adult, are seldom highly pleasurable, and are more often unpleasant or embarrassing. Here is indicated the effect of the conflict or partial censorship. The exhibitionistic tendency or wish wholly repressed in its original form in waking life is now permitted expression because of the partially relaxed censorship, but the disagreeable feeling indicates that the repressing tendency is not entirely in abeyance.

Death dreams and death wishes are allied in their having a similar infantile origin. Children do not understand death as anything more than being absent or out of the way. Often they will shock their elders by wishing that a certain playmate were dead, probably a playmate with whom they have just had a little quarrel. Such death wishes are supposed to be common. The course of life brings a fuller knowledge of death and also a stronger tendency to repress the death wishes. It must be clear, however, to all who read the daily papers that the death wish is not entirely suppressed by maturity. If occasionally it breaks out into action, then it must exist in a repressed form in many others. A wish so repressed readily becomes one of the formative factors in dream making. So death dreams may be a fairly direct expression; on the other hand, they may be highly symbolic expressions as the consequence of much displacement of affect.

A feature of the psychoanalytic theory which at first seems bizarre is the statement that dreaming is the protector of sleep and not the disturber, that dreaming is also the realization of the wish to sleep. We retire with the wish to sleep; and, with the passage into sleep, this wish becomes foreconscious. Then,

if some combination of wishes in the unconscious threatens to bring to expression material which is disagreeable, while the censorship is relaxed, waking must take place to continue the suppression of the disagreeable. But such waking would not satisfy the wish to sleep. If dream formation takes place, then no harm is done. The material is so distorted as to appear harmless or relatively so, and hence, by this compromise method, the wish to sleep is satisfied as well as the wishes coming up from the unconscious. Therefore they say that the dream is the guardian of sleep.

The early Freudians contended that the illusion theory for the explanation of dreams was wholly insufficient. To explain a dream by saying that it was a process of free association aroused by an intruding stimulus was misleading because this pretended to explain and actually drew attention to the significance of the stimulus and away from the real problem, that of the course of the dream which the stimulus was supposed to arouse. Why, they asked, did one and the same stimulus, as an alarm clock, for example, produce different dreams at different times? To talk of the conditions of association is to speak of vague generalities which savor too much of chance. The psychoanalytic theory offers a complete change of base. The intruding stimulus of the night is but an incident, a relatively unimportant incident, of the whole process of dream formation. It constitutes, in fact, merely some convenient foreconscious material which can be picked up by the dream for purposes of secondary elaboration. If a dream just coming to consciousness concerns a wedding then the alarm clock may be picked up as a wedding bell. But if the dream concerns other matters the alarm clock may not figure at all. Then the dreamer says that the alarm clock interrupted a very pleasant dream, but cannot tell what stimulus set it off. The psychoanalyst looks within the individual to find the motivation of the dream and by so doing thinks he is able to answer more questions than the older theorists.

Freud brought up again the problem of the apparently impossible speed of the dream, as in the case of Maury's guillotine dream. This could not apparently be explained by the orthodox psychological theory; and, if the alleged great speed were true, then it constituted a serious obstacle to any but the psychoanalytic interpretation. By accepting the wish determination theory, with all the mechanisms of the dream work, this apparent speed becomes readily explainable. Much if not most of the dream work is accomplished before presentation to consciousness occurs. Then, a very long story, as long as Maury's or longer, could come to consciousness at the moment of waking as a unitary whole. Thus the alleged speed problem was thought to have been overcome. Again, the peculiar selection of material whereby the content of dream life seemed to be so silly in comparison with the serious things of waking life was thought not to be adequately explained except by the psychoanalysts. For them the silliness was but apparent. Actually all dreams had a profound, if not sinister, significance, which was lost sight of unless the latent content was examined.

The reader of current psychoanalytic literature will find that the general framework of the above presentation still stands. In place of the censor, there now appears the group of ego instincts. The conflict is now thought to be between the sex instincts and the ego instincts. Both seek pleasure, but the ego group centering about the ego ideal take the longer look, hence the conflict with the sex group, which seek immediate pleasure. To be sure, the term censor is yet far from being abandoned; but the advent of emphasis, which appears to be growing, upon the ego instincts and the ego ideal points to the probability of its eventual abandonment. The repression may now be thought of as due to the conflict between the sex group and the ego.

The concept of *regression* is taking a more prominent place in dream interpretation. The type of thinking in the dream is infantile and pre-logical, it harks back to the Narcissistic period of development, the period of self-love. The dream

itself is selfish. Hence dreaming may be thought of as a regression back to the infantile narcissistic stage. This can be allied to the theory that sleep is a retreat from reality to infantilism. Jung and his followers have made somewhat more of this aspect of the theory. They emphasize the existence of two kinds of thinking, reality thinking and fantasy thinking. The latter is often termed autistic thinking, sometimes even foreconscious thinking. Fantasy or autistic thinking is racially and individually older than logical or reality thinking. Dreaming then is of the fantasy or autistic variety of thought. Logic and reality are ignored.

Jung, furthermore, has insisted upon the racially cumulative nature of the unconscious. This is definitely a return to the old recapitulation theory and the notion that the past of the race may be found in the depths of the soul of man. Jelliffe has gone so far as to talk of paleopsychology,¹ which suggests that the psychologist may discover traces of the past and the far past by digging down into the depths of the unconscious by psychoanalytic procedure, much as the paleontologist discovers the anatomical history of man by digging into the bowels of the earth. Then, as consciousness is influenced by the content of the unconscious, it will be influenced in the ways of thinking which have been characteristic of the race.

There seem then to be certain characteristic thought forms, characteristic of the race and of the individual unconscious. One of these is the desire to overcome and displace the father, rebellion against his authority. In race history these thought forms have found expression in mythology, which, like dreaming, is fantasy and not reality thinking. If the theory is sound then the same thought forms should be found in both mythology and in dreams today. The advocates of the theory claim to find ample evidence of such community of form. A conspicuous and famous example is known as the *Œdipus complex*. There is the myth of *Œdipus*, who killed his father and

¹ Jelliffe, S. E., "Paleopsychology," *Psychoanal. Rev.*, 1923, 10, 121-139.

eventually married his mother. In dreams, killing the father and marrying the mother is said to appear frequently, although, so far as the manifest content is concerned, in a disguised form. All this leads back again to the struggle going on within the individual to become adjusted to a life much of which conflicts with the individual desires.

With this fact of the seeking for adjustment in mind, the dream takes on yet another significance. The dream is a make-shift adjustment. In it neither the ego ideal nor the sex instincts are fully satisfied or realized, but a compromise is arrived at. The condensations and the displacements are but incidents in the production of the compromise. Hence the dream means perhaps more than the mere expression in concealed form of a repressed wish; as a compromise adjustment it leads the analyst to both sides of the problem and helps to point the way toward a more satisfactory adjustment which may be achieved under wise guidance. With a knowledge both of the sex wishes and of the ego wishes involved, with a frank conscious recognition of them all, a long step toward a more satisfactory adjustment has been made.¹

The inevitable consequence of such theorizing is the tendency to tabulate the characteristic thought forms as guides in analysis. This is a tendency to assume a stereotyped basis or frame work for dreaming. Such a conception of stereotypy has colored psychoanalytic theory almost from the beginning. Human wishes are after all very much alike and, when reduced to their fundamental forms, are not so hopelessly numerous. The range of associations within which displacement can take place is also limited. The Kent-Rosanoff study of human associations revealed this limitation of range most strikingly. There should therefore be no very great difficulty in making a partial

¹ For interesting and important variations of this see the following: Bagby, E., "Dreams during periods of emotional stress," *J. Abn. & Soc. Psychol.*, 1930, 25, 289-292. Maeder, A. E., *The Dream Problem*. Nerv. & Ment. Dis. Monog., No. 22, 1916. Pp. 43. Rivers, W. H. R., *Conflict and Dream*. New York, Harcourt, 1923. Pp. 194.

list at least of those dream items which could be recognized at once as probably representative of certain unconscious wishes. If to this is added the notion of a racially cumulative unconscious, then the possibility of making such a list of stereotyped forms becomes all the more reasonable. Furthermore, the universal habit of human kind to think in symbolic terms would lend additional support. There are a vast number of things in life which we prefer to mention by indirection, by euphemisms, because the calling of a spade a spade would be very unpleasant. Hence psychoanalysts have fallen into the way of thinking and working in terms of many fixed symbols. These symbols they welcome in an analysis because they contend that their experience has demonstrated them as guides to the content of the unconscious. Many, if not most, of these have in one way or another a sexual significance. Systematic statistical presentations of frequency as a basis for the generalizations made concerning these symbols are, however, unfortunately wanting. The psychoanalysts may nevertheless be correct.

Interrelation of Theories. Upon first reading, the psychoanalytic interpretation of dreams and that of the general experimental psychologist seem to be far apart. In many items they are quite different, but the trend of development seems to be convergent rather than divergent. Whether or not this observation is correct, the eventual outcome must be a convergence and a synthesis. The psychoanalyst cannot indefinitely ignore the fact that dreams have been produced and the dream content definitely influenced by experimental studies. Peripheral stimulation has done this, and still more significant is the evidence indicating that dreams are, to some extent at least, dependent upon the endocrine balance. When the latter is an established fact, as it seems likely to become, then the tendency to ignore physiology, biology and experimental psychology must go by the board. On the other hand, the non-psychoanalytic studies of an experimental nature have concentrated upon stimulus and response, whereas the frequent

collections of dream content have clearly shown that many dreams were primarily influenced by wishes.

But these wishes are not all of sexual nature. Fear is also a frequent motivation. In Blanchard's study of the dreams of a large number of children, almost as large a proportion of fear dreams was found as of wish-fulfillment dreams. The many studies of soldiers' dreams demonstrated that fear and not sex was in them the repressed motivation. Where these wartime fear dreams have been carefully studied, they have sometimes been found to have a wish motivation involved; but this has far from always been a sex wish. MacCurdy thought that these war dreams were a realization of the repressed wish for death, which, it will be observed, is quite another motivation than that of sex. Freud was so puzzled by them that he sought another principle older even than that of pleasure for their explanation. He found it in a fundamental tendency to repeat and traced the whole conflict back to that between life-seeking motives and death-seeking motives.¹ Dream censuses have also shown that grief and a desire for revenge or retaliation are also to be listed as motivations for dreaming. To trace all these back in some way to sex motivation seems unnecessarily exiguous. Apparently both schools must recognize that dreams are motivated often by a variety of wishes as well as by organic conditions and stimulation.

The method of free association by which the psychoanalyst has hitherto found his latent content must also be subjected to critical examination. The course of that free association may not be free, especially if the subject is directed to give expression to everything no matter how personal and disagreeable and the like. Such directions prevent free association and

¹ Blanchard, P., "A study of subject matter and motivation of children's dreams," *J. Abn. & Soc. Psychol.*, 1926, 21, 24-37. Freud, S., *Beyond the Pleasure Principle*. New York, Boni and Liveright, 1922. Pp. 90. Green, G. H., "The problem of the terror dream," *Psyche*, 1924, 5, 129-137; *The Terror Dream*. New York, Dutton, 1929. Pp. 126. Watt, H. J., *The Common Sense of Dreams*. Worcester, Clark Univ. Press, 1929. Pp. 212.

establish a set toward the personal and the disagreeable. Then, after a string of such associations have been produced, it is dangerous to assume that any item arrived at was the original cause of that from which the chain of associations started. In a very clever paper, Bellamy¹ applied the free association procedure to some simple acts of everyday life, such as turning a corner and finding a house with a certain number. He came upon associations which were quite like those discovered as the motivations of the dream. It is a pity that there have not been more such control studies, for without controls such research is unreliable for scientific purposes, however productive it may be in therapeutic work. If from the acts of operating a typewriter or driving a nail one could by free association come upon ideas and emotions of a fearful or sexual nature, it would be folly to conclude that the operation of the typewriter or the driving of the nail had been somehow in a concealed manner motivated by them. And, furthermore, operating the typewriter and driving the nail are in the world of reality and not of fantasy. The selection from a chain of associations of those items which are significant to the dream interpretation has hitherto depended upon the intuitive genius of the analyst and upon the unsystematically established list of symbols. Neither is a scientific procedure, although the use of the symbols might become so. The intuitive selection must eventually give way to more certain procedure.

A step in this direction has been made by a group of experimenters² who have sought to combine free association procedure with one of the methods of expression for the detection of emotional states. They combined free association with the psychogalvanic reflex and, while it cannot be said that their results are in any sense final, it does indicate the direction which experimental study will probably take. That there are virtues in the

¹ Bellamy, R., "An act of everyday life treated as a pretended dream and interpreted by psychoanalysis," *J. Abn. Psychol.*, 1915, 10, 32-45.

² Ikin, A. G., Pear, T. H. and Thouless, R. H., "The psychogalvanic phenomenon in dream analysis," *Brit. J. Psychol.* (Gen. Sec.), 1924, 15, 23-44.

unchecked free association no unprejudiced reader of psychoanalytic literature can deny, but to be scientific it must be supplemented by experimental studies which will establish precise technique to take the place of intuition.

Day-dreaming. Day-dreams have been far less studied than have nocturnal dreams, even though they present a state or a process far more accessible to experimentation. And it may be that day-dreams are even more closely allied to the abnormal. So far as we know their content is approximately that of nocturnal dreams. Children day-dream of plays, and games, and adventures and achievements which might readily be termed the realization of wishes. Day-dreams of adults are of much the same nature. In them the adult achieves that which he longs for in reality. Day-dreams of sickness and death and suffering, which seem to be fairly common, may be but a means of achieving the center of the stage and the attention desired. Day-dreams of greatness, wealth, professional success, sweet revenge, anything in fact which enhances temporarily the self-esteem, are the common lot of normal adults. It should also be observed that in day-dreaming there is an indifference to sensory stimulation approximating almost that which is called psychic blindness and psychic deafness. Obviously a numerous collection of the day-dreams of any given individual who was the subject of psychological study would be an invaluable contribution to the understanding of the personality and the personal career. What one might have been and is not undoubtedly helped to produce what one is. Only the psychoanalysts and the psychopathologists have given much serious attention to day-dreams.

At present the day-dream is assumed to be but the waking counterpart of the nocturnal dream: All the mechanisms applied in the interpretation of the nocturnal dream must be used in its interpretation as well. It is fantasy thinking, the individually old and the racially ancient mode of thought. It is a temporary lapse from reality back into fantasy, perhaps a re-

treat from a disagreeable reality. Too much of this, it is pointed out, breeds a habit of finding the satisfactions of life in fantasy rather than in an adequate adjustment to reality. The result is at best inefficiency and at worst perhaps dementia præcox. This is assuming that dementia præcox can be explained adequately in psychogenic terms, an assumption not yet entirely justified.

There is some evidence for thinking that those who day-dream excessively are those of comparatively weak personality synthesis. If a total score on the Thurstone personality schedule can be safely taken as an indication of instability or tendency toward abnormality, then significance will be found in the appearance of higher frequencies of day-dreaming in those groups which give the higher scores. The following table based on returns with this schedule from 295 college students presents the group frequencies as obtained by the writer:

DAY-DREAMING FREQUENCY IN RELATIONSHIP TO SCORES ON
THURSTONE PERSONALITY SCHEDULE

Class	Thurstone classification	No.	Day-dream frequency		Day-dreams of improbable occurrences		Day-dreaming fre- quently, losing feel- ing of reality also	
	Score		No.	%	No.	%	No.	%
A	0-14	11	1	or 9	1	or 9	0	
B	15-29	49	23	or 47	10	or 20	4	or 17
C	30-59	156	107	or 69	67	or 43	39	or 36
D	60-79	48	43	or 90	36	or 75	25	or 58
E	80-	31	27	or 87	28	or 90	23	or 85

These figures make it clear that, for this group of students at least, the more unstable much more frequently gave positive answers to the question about frequency of day-dreaming. One observes also an equally significant rise in the frequency of statements that their day-dreams were of improbable occurrences: but the interpretation of this is not so simple. Perhaps it indicates merely that maladjustments, conflicts, and the like, are more frequent and influential in those persons giving the higher Thurstone scores. Even this much, however, is worth knowing. That the loss of the feeling of reality is definitely

associated with frequency of day-dreaming, as is indicated in the last column above, is not surprising to those who recall the loss of the consciousness of reality as stressed by Janet in his interpretation of the hysterics. Thus, where day-dreaming is frequent, of improbable occurrences, and associated with a loss of the feeling of reality, one may wisely look for other indications of a psychoneurotic trend, perhaps even of psychotic tendencies.¹

It has been frequently pointed out that day-dreams have been often productive of much good in life, at least of much that is enjoyable. There is danger here of confusing day-dreaming with constructive imagination. Such a confusion is not necessary if one keeps clearly in mind that in the day-dream the end is in the dream itself; in constructive imagination, the end is in the achievement to be brought about as a consequence of the period of constructive imagination. But, even excluding the periods of constructive imagination and concentrating upon that which is purely day-dreaming, it will be found that much in the graphic arts, in poetry, in drama, and perhaps in other forms of art as well, is the reproduction of day-dreaming. Psychoanalysts seem at times to have been quite successful in the interpretation of artistic productions when they have been attacked on this basis.

In spite of all the faults of the psychoanalysts, they have brought clearly to light certain relationships between conscious states and modes of behavior which will probably stand the fire of criticism and experimental check. They have pointed out that even the false or imagined dream is subject to the same causal conditions as the day-dream or the nocturnal dream. If one is told to make up a dream deliberately, such a dream is found to be as indicative of the individual's wishes and general character background as any other form of dream. Ordinary lying is similarly motivated. It is an attempt to appear in a

¹ The above figures and significances were first published, with further discussion, in the author's *Principles of Adolescent Psychology*, pp. 225-227.

manner more satisfactory to the self for the time being than circumstances would otherwise permit. It must be admitted no doubt that the only thoroughly honest (or frank) person is one too feeble-minded to be otherwise. The difference between honesty and dishonesty in the normal adult is a difference of degree not of kind. The lie is a socially less acceptable form of pretense or defense. Its motivation is of a piece with that which motivates day-dreams and nocturnal dreams. Thus it may be said with a fair degree of confidence that nocturnal dreams, day-dreams, false or imaginary dreams, and lies are but forms within the same general class of states or modes of behavior.¹

Bovaryism. This term is not yet much used in English. It comes from the French and obviously grows out of Flaubert's famous novel, *Madame Bovary*. It designates a peculiar pattern of personality development in which day-dreaming, or fantasy thinking, is confused with the facts of the perceptual world. Of this, most readers will recall, *Madame Bovary* was a conspicuous example. The French authors who have discussed these cases believe that there are many degrees of this ranging from the normal, healthy day-dreaming not confused with reality through to those whose lives become sadly tangled because of an apparent inability to distinguish between that which is real and that which is fantasy. Of the psychogenesis of these states we know practically nothing yet. Perhaps they should be classed as evidences of constitutional psychopathy. But until more have been studied clinically and experimentally it is not safe to make any positive statements about them.²

Delirium. Delirious states appear to be allied to dream states, perhaps with many possible gradations through from

¹ For a more complete presentation of the psychology of day-dreaming, especially in its normal and genetic aspects, see the author's *Principles of Adolescent Psychology*, pp. 217-232.

² Levy-Valensi, J., "Bovarysme et constitutions mentales," *J. de psychol.*, 1930, 27, 289-299. See also the author's discussion of this in relation to adolescent growth changes in his *Principles of Adolescent Psychology*, pp. 226-229.

normal dreams to acute delirium. The causation of delirious states is more complicated than that of normal dreams and undoubtedly involves a much larger organic factor. Psychologically considered there seems to be in the delirious states a greater intensity both of imagery and of affect, and certainly the path to motor expression is often much more readily traversed. In alcoholic delirium there is great motor activity; the patient storms about talking and gesticulating wildly concerning a situation which is hallucinatory in nature.

Dreams and Psychosis. In psychotic cases dreams may be the origin of delusions. A delusion of pregnancy may be traceable to a dream of being raped.¹ Case histories reporting a distressing dream which recurs with marked regularity and fidelity to detail have been found eventually to be cases of petit mal epilepsy. The dream recollection was all that the patient could recall. The seizure was of a mild nature and occurred at night, when not under observation. While such cases are probably rare, nevertheless the student of abnormalities must keep the possibility in mind. Changes in the course of psychotic states may be accompanied by changes in dream content, either ideational or affective. Savage reports that melancholias, when improving, often have happy dreams of home and health recovered.

As fear is now clearly recognized to be a significant factor in the production of dreams, it is important to observe yet another relationship of dreaming to mental disease. Many people go through life or through many years of life with the haunting fear of some day becoming insane. Often the reason for this fear is poorly founded; but, as they carefully refrain (repression) from seeking reliable advice on the subject, the fear and the conflict continue. This is most unhygienic, as the continued fear may deplete and otherwise pave the way for the actual development of abnormalities. While the fear contin-

¹ Savage, G. H., "Some dreams and their significance," *J. of Ment. Sci.*, 1912, 58, 407-411.

ues, it may stimulate dreams of that which is feared, dreams of insanity. If by some competent advice or other good fortune the fear is removed, then the troublesome dreams may gradually disappear. But, if there should really be good cause for the fear, and the subject of such dreams subsequently develop some form of mental disease, then in the eyes of observers the apparently prophetic dream may take on a misleading significance. Where such cases occur, it is important to look back into the patient's history for the motivation and not too hastily conclude that the insanity first appeared in the form of an anticipatory dream.

Relation to Psychoneuroses. The relationship of dreams and dreaming to psychoneurosis is very intimate, whatever interpretation either of dreams or of psychoneurosis one may prefer. The hysterical patient in a somnambulism, whether it be monoideic or polyideic or fugue, is living in a dream. The subject who suffers nocturnal somnambulism is walking not in his sleep but in his dream or with his dream. The content of the experiences are alike in their hallucinatory nature and in the limitation of the range of association. In neither state is the subject able to recognize and criticize the processes which are focal. There is not, it is true, as complete an amnesia for the content of normal dreams as the hysteric experiences for his hysterical seizures; but perhaps there is much more amnesia for dreams than we suppose. It may be that, as some contend, we have no dreamless sleep. If that is true then we suffer a vast amount of amnesia for dream content. If the psychoanalytic interpretation be even approximately true then we actually recall but a few fragments of the dream.

The same interpretation is applicable to both dreams and psychoneurotic phenomena. Dreams may be thought of as the consequence of a lowered psychological tension and a greatly weakened synthesis, with some disturbing stimulus often highly toned emotionally. Certainly there is in dream life much dissociation. The recurrent dreams remind one of

obsessions, nightmares of phobias. Janet's interpretation can be readily adapted to all. The psychoanalytic theory of the psychoneuroses in terms of repressions and conflicts and displacements is identical with the psychoanalytic interpretation of dreams. All this brings out once more the genetic nature of the relationship between normality and mental disease. The diseased condition is a distortion of the normal, and between the two there may be an infinite number of gradations.¹

¹ For some very clever suggestions on the control of dreams see Arnold-Foster, Mary, *Studies in Dreams*. New York, Macmillan, 1921. Chap. II.

SELECTED REFERENCES

- Bagby, English, "Dreams during periods of emotional stress," *J. Abn. & Soc. Psychol.*, 1930, 25, 289-292.
- Bentley, M., "The study of dreams; a method adapted to the seminary," *Amer. J. Psychol.*, 1915, 26, 196-210.
- Berrien, F. K., "Recall of dreams during the sleep period," *J. Abn. & Soc. Psychol.*, 1930, 25, 110-114.
- Blanchard, P., "A study of subject matter and motivation of children's dreams," *J. Abn. & Soc. Psychol.*, 1926, 21, 24-37.
- Calkins, M. W., "The statistics of dreams," *Amer. J. Psychol.*, 1892-93, 3, 311-343.
- Coriat, I. H., *The Meaning of Dreams*. Boston, Little, 1915. Pp. 194.
- Craig, Katherine T., *The Fabric of Dreams*. New York, Dutton, 1918. Pp. 380. (Contains material on ancient forms of dream interpretation.)
- Ellis, Havelock, *The World of Dreams*. Boston, Houghton, 1911. Pp. 288.
- Freud, Sigmund, *The Interpretation of Dreams*. New York, Macmillan, 1913. Pp. 510.
- Freud, Sigmund, *Dream Psychology*. New York, McCann, 1921. Pp. 238.
- Green, G. H., *The Terror Dream*. New York, Dutton, 1929. Pp. 126.
- Jastrow, Joseph, *Fact and Fable in Psychology*. Boston, Houghton, 1901. Pp. 375.
- Kimmins, C. W., *Children's Dreams*. New York, Longmans, 1920. Pp. 126.
- Klein, D. B., "The experimental production of dreams during hypnosis," *Univ. Texas Bull.*, No. 3009, 1930. Pp. 71.

- MacCurdy, J. T., *Problems in Dynamic Psychology*. New York, Macmillan, 1902. Pp. 383.
- Maeder, A. E., *The Dream Problem*. Nerv. & Ment. Dis. Monog., No. 22, 1916. Pp. 43.
- Rivers, W. H. R., *Conflict and Dream*. New York, Harcourt, 1923. Pp. 195.
- Selling, L. S., "Effect of conscious wish upon dream content," *J. Abn. & Soc. Psychol.*, 1932, 27, 172-178.
- Varendonck, J., *The Psychology of Day-dreams*. London, Allen and Unwin, 1921. Pp. 367.
- Vaschide, N., *Le sommeil et les rêves*. Paris, Flammarion, 1911. Pp. 307. (Contains excellent bibliography.)
- Vold, J. M., *Über den Traum*. Leipzig, Barth, 1912. Pp. 879.
- Watt, H. J., *The Common Sense of Dreams*. Worcester, Clark Univ. Press, 1929. Pp. 212.
- Weygandt, W., "Beiträge zur Psychologie des Traumes," *Philos. Stud.*, 1902, 20, 456-486.
- Willoughby, R. R., "An adaptive aspect of dreams," *J. Abn. & Soc. Psychol.*, 1929, 24, 104-107.

CHAPTER XVIII

PSYCHOTHERAPY

CASE HISTORY, DETERMINATION OF PERSONALITY PATTERN, DISCOVERY OF REPRESSED MATERIAL, INDIRECT METHODS (DREAM ANALYSIS, FREE ASSOCIATION, ASSOCIATION TO SELECTED STIMULI), DIRECT METHODS (CRYSTAL GAZING, AUTOMATIC WRITING, HYPNOTISM, DIRECT QUESTIONING), PSYCHOTHERAPEUTICS, RANGE OF PSYCHOTHERAPEUTIC APPLICATION.

After such a survey as this of the many forms of abnormality in human experience and behavior, it is quite natural to look for answers to the question, what can be done about them or for them. Many have raised this question and not a few have tried to answer it. Schemes for mental healing are numerous, some of them very old.¹ In recent years, especially since the stimulus given both to therapy and to psychology by the psychoanalytic movement, there has been a rapid development of procedures for the care and treatment of all forms of mental abnormality. Much of this development is on a speculative basis, and often far beyond any foundation in a scientific psychology. There are many varieties and numerous sub-forms of these schemes and theories for psychotherapeutic practice. Obviously this is no place for a complete presentation or discussion of all of them. Only their general principles can be pointed out.

It should also be observed by way of introduction that the fields of the psychologist and the psychiatrist are largely distinct although closely related. Psychology is but one of the basic sciences of which the medical practitioner makes use in

¹ See Cutten, G. B., *Three Thousand Years of Mental Healing*. New York, Scribner, 1911. Pp. 318.

his work of healing human ills. The psychiatrist is a physician who makes much more use of the contributions of psychology, and especially of the psychology of abnormal forms of behavior, because he is working primarily with patients who suffer disturbances of behavior which may as often be functional as organic in nature. But the practice of psychiatry is far from being limited to the application of the psychology of abnormal behavior, because most cases of psychoneurosis and psychosis are more or less involved in some way with the effects of organic lesions or with organic reactions.

With these introductory observations in mind, one may wisely turn to the essential features of psychotherapeutic procedure. What some of these must be has already been indicated by the foregoing presentations of the nature and origin of the abnormalities. A thorough case history must be a first step; the general pattern, or type, of personality must be discovered; and where there are complexes and conflicts, maladjustments, the repressed material must be brought to light. After these things have been done a program of therapy can be laid out.

Case History. The importance of a detailed case history is even greater for psychotherapy than for other therapies. The actual beginnings of a speech defect, an obsession, a phobia, an hallucination, a delusion, or what not may be far back in the personal history of the individual sufferer, and it may be very different in apparent nature from the symptom pattern brought for therapeutic consideration. Consequently a case history can rarely if ever be too full or too detailed. It must more nearly approximate a biography than does the ordinary medical history. Sometimes the roots of the trouble are found as far back as the years of infancy or early childhood, some think even in the birth experience, sometimes in later childhood, sometimes in adolescence. The originally distorting factors may involve relations with other children, with parents, with sex problems, with the social adjustments of adolescence

and early maturity, with any one of the vast number of different experiences and adjustments throughout the life history.

Such a history must be gathered with proper caution for possible errors in the sources of information. Questioning of the patient is a commonly used method, but in obtaining a history by this means there is always the possibility of much omission (defense mechanism) and much distortion of apparent meaning through confusion of fantasy with fact (retroactive paramnesia). It is considered good practice to check as far as possible with the observations of other persons. Associates can, also, often supply the examiner with information concerning personality traits which could never be obtained by direct questioning.

Determination of Personality Pattern. In addition to the general case history, it is now considered of much importance to know the general pattern in which the particular abnormality under consideration appears. The setting like the history, of which it may well be thought a part, gives to the psychiatrist much information which can be used both for interpretation and for guidance in planning a program of treatment.

Many consider it important to obtain the type classification in terms of Kretschmer's cyclothyme, schizothyme, and the corresponding body types, in terms of extraversion and introversion, or in terms of some other scheme for the classification of personalities.¹ But in this connection it is wise to recall that there is now much question of the once popular notion that the prepsychotic type corresponds to the pattern of the psychosis. Nevertheless, much useful information may be obtained in the process of seeking to discover the prepsychotic type or pattern. And, certainly in psychoneurotic conditions, much may be learned from the general setting in which the abnormalities appear.

For such purposes as these a number of useful questionnaires have been developed with which anyone seeking to make a

¹ See presentation of these with references in chapter I.

careful study of a given instance of abnormality of behavior should be familiar. The Woodworth personality inventory was one of the first, if not the first, of its kind. Later there was developed a modification of this for use with children, known as the Woodworth-Mathews questionnaire. Laird has published another which has been extensively used. The Thurstones have devised one which they term a personality schedule. The original purpose of this was to have some means of discovering among entering freshmen in colleges those who were most likely to be in need of psychiatric attention; but it has since been used for other and more definitely diagnostic purposes, in ways that may not be justified. Many have found the Bernreuter inventory useful, especially because of the four different ways of scoring that are provided. More recently there has appeared a promising inventory sheet by Bell.¹ In the use of any of these, however, much caution must be exercised. A single score may be quite misleading.² Far more important is it to observe how the individual questions are answered. And then, again, it is necessary to be cautious about even their interpretation. What at first may look like a marked instability may prove to be nothing more than a healthy adolescent uncertainty and inexperience. Furthermore, none of them can be thought of as tests. They are merely substitutes for oral questioning, and are therefore subject to influence by the prevailing attitudes of the person who answers them. Such

¹ Woodworth's Psychoneurotic Inventory published by C. H. Stoelting Co., Chicago, Ill. For the Mathews revision see Mathews, E., "A study of emotional stability of children," *J. Delinq.*, 1923, 8, 1-40. The Laird blanks may be obtained from The Hamilton Republican, Hamilton, N. Y. Thurstone Personality Schedule, University of Chicago Press, Chicago, Ill. Bernreuter Personality Inventory, Stanford Univ. Press, Stanford Univ., California. Bell, H. M., The Adjustment Inventory, Stanford University Press. For more details concerning all of these and other measures, with discussion and references to research with them, see Symonds, P. M., *Diagnosing Personality and Conduct*. New York, Century Co., 1931. Chap. V.

² Landis and Katz conclude that a high score may be accepted as indicative of maladjustment but that no conclusion can be drawn from a low score. Landis, C. and Katz, S. E., "The validity of certain questions which purport to measure neurotic tendencies," *J. Appl. Psychol.*, 1934, 18, 343-356.

a person may be willing to coöperate to the full, and he may be quite negative or self-defensive.

Discovery of Repressed Material. The cure or relief in many instances depends upon success in discovering complexes or the disturbing traces of former experiences which cannot be voluntarily recalled, or which is, at least, not reported by the subject. Something is obviously interfering with the discovery or reproduction of that which the examiner seeks, and which would throw much light upon the causation of the troublesome symptoms. It is necessary then either to avoid the repressing mechanisms, to discover the material indirectly, to weaken or remove the repressing mechanisms, or to break through them. For this purpose a number of methods have been devised.

These methods may for convenience be divided into those which are direct and those which are indirect. The indirect methods seek only the probable nature of the complex. The direct methods seek to arouse as immediately as possible a detailed recall of the content of the complex, or of its general nature.

Indirect Methods. Of these, *dream analysis* has been one of the most favored. In sleep the inhibiting mechanisms are assumed to be relaxed, consequently the repressed but still active wishes or impulses or unsatisfied drives are supposed to find expression in the manifest content of the dream. That this manifest content is often fragmentary, distorted, and otherwise misleading has already been pointed out in the chapter on dreams. It is therefore necessary for those who seek to discover complexes through the dreams to go much farther than the mere recording of them. It is necessary to discover by psychoanalytic procedures that which constitutes the latent content, and then to piece the whole mass of material together into as coherent a presentation as possible. But, even then, he may not have more than useful hints as to the probable underlying motivation of the disturbance that he is studying.¹

¹ The reader here would do well to review the presentation of the psychology of dreaming in chapter XVII.

In the method of *free association*, the subject is placed in a comfortable position and told to relax completely, to close the eyes if it is of any assistance in achieving the relaxation, then to give free expression to anything which may come to consciousness. The subject is impressed with the importance of giving expression freely to everything, everything in fact no matter how silly or insignificant or personal or disagreeable or delicate or apparently irrelevant it may seem to be. The obvious purpose of such instructions is to set aside as completely as may be possible all effect of inhibitions. Then the subject talks freely and is encouraged to continue to do so and of course the analyst makes a careful record of what is said for subsequent study. Often this free association is aided by the mention of some possibly significant items from recently recorded dreams or from previous sittings for such free association procedure. By stimulation in this manner it is hoped to direct the free association into revealing more and more significant material.

This procedure, sometimes called the "talking cure," is famous as the basis for much discussion. Its advocates argue for it on the basis of their successes in discovering repressed complexes, and their claims for cures thereby. On the other hand, its critics have contended that it is at least not a process of free association at all. Both critics and devotees recognize that the freedom of such associations is but relative. The very assumption of the psychoanalysts that such free associations may be influenced by repressed material is sufficient evidence that the course of association is not wholly free. What they mean is that it is free from conscious direction and as far as possible free from the habits of inhibition. But the critics go farther and argue that the instructions given to the subject, to talk freely of everything which comes to mind no matter how silly or insignificant or personal or disagreeable or delicate or apparently irrelevant it may seem to be, are actually such as to produce not the relatively free but a form of controlled asso-

ciation. These instructions, it is argued, set up an attitude which directs the association process to bring to mind that which is intimate and personal and disagreeable. Under such instructions, if continued long enough, any human mind would eventually give expression to sexual thoughts. Psychoanalysts, who claim that there is a sex basis for all disturbing complexes, can thus by continuing the process long enough always produce from any subject the kind of material that they are seeking.

It has also been often pointed out that there is a dangerous piece of reasoning present in thinking that, by starting from some item in a dream or previous sitting and through free association eventually coming to other material, one has thereby arrived at the cause of the item with which the process began. If one starts with A and finds that B, C, D, E, F, and G follow, has one any right therefore to argue that because G eventually followed by free association from A it was originally the cause of A? Such reasoning has long been condemned as fallacious in the textbooks of logic. While such criticisms are undoubtedly sound, they do not entirely set aside the practicability of this free association method. If one has obtained by some other method a clue to the probable nature of the disturbing material, one may then by this process of free expression in a partially abstracted state, which of course it is, often discover the full details. But this does not mean the acceptance of it as free nor adherence to the dictum that all such repressed material is at basis sexual, even though it may often be so.¹

The method of *free association to arbitrarily selected stimuli*, a series of stimulus words, has proved very fruitful and, while it is now undergoing a thorough overhauling in the hands of the experimental psychologists, the result seems likely to be not a rejection of it but a very great improvement of its tech-

¹ A very complete and valuable criticism of psychoanalytic technique and assumptions will be found in Woodworth, R. S., "Some criticisms of the Freudian psychology," *J. Abn. Psychol.*, 1917-18, 12, 174-194.

nique. As devised by Jung the set of stimulus words, one hundred in number, was selected with a view to including therein words which would touch by association upon most of the phases or activities of life, especially those likely to cause complexes and complex disturbed behavior. Such a list could be used where there was no clue as to the possible nature of the repressed material. The theory is like that of the better known association reaction test for criminal knowledge.¹ It is assumed that there is some memory held in the background and that this memory or repressed complex is the cause of the patient's symptoms, and further that this memory will readily arouse emotion if stimulated. Then it is assumed that if a stimulus word is related to the repressed or forgotten material such repressed or forgotten material will be aroused by the perception of that word, and that its emotional accompaniment will make itself evident in some one of several possible forms of disturbance of the association reaction. If the analyst has no knowledge of the probable or even possible nature of the repressed material, it is necessary to use such a comprehensive list of stimuli as that devised by Jung. What words are to prove significant he has no way of knowing in advance. Herein lies the primary difference between this procedure and that of detecting criminal knowledge, because in the latter the examiner carefully inserts a list of known significant words.

Of the general diagnostic lists one of the best is that made by Eder. This is an adaptation from Jung's famous list. Alterations of Jung's selection were necessary to avoid certain difficulties which grew out of translation problems. Eder's list follows:

¹ But the use of the association reaction method for the discovery of criminal knowledge has been much more carefully refined. See Crosland, H. R., *The Psychological Methods of Word-Association and Reaction-Time as Tests of Deception*. Univ. Ore. Pub., Psychol. Ser., 1929, 1. Pp. 104. Swartz, B. K. and Crosland, H. R., "The effects on reaction-time of various orders and distributions of relevant stimuli in the word-association experiment," *J. Gen. Psychol.*, 1933, 8, 217-271. (Note especially the survey of literature and the bibliography of 137 titles.)

1. head	26. blue	51. frog	76. wait
2. green	27. lamp	52. try	77. cow
3. water	28. carry	53. hunger	78. name
4. sing	29. bread	54. white	79. luck
5. dead	30. rich	55. child	80. say
6. long	31. tree	56. speak	81. table
7. ship	32. jump	57. pencil	82. naughty
8. make	33. pity	58. sad	83. brother
9. woman	34. yellow	59. plum	84. afraid
10. friendly	35. street	60. marry	85. love
11. bake	36. bury	61. home	86. chair
12. ask	37. salt	62. nasty	87. worry
13. cold	38. new	63. glass	88. kiss
14. stalk	39. habit	64. fight	89. bride
15. dance	40. pray	65. wool	90. clean
16. village	41. money	66. big	91. bag
17. pond	42. silly	67. carrot	92. choice
18. sick	43. book	68. give	93. bed
19. pride	44. despise	69. doctor	94. pleased
20. bring	45. finger	70. frosty	95. happy
21. ink	46. jolly	71. flower	96. shut
22. angry	47. bird	72. beat	97. wound
23. needle	48. walk	73. box	98. evil
24. swim	49. paper	74. old	99. door
25. go	50. wicked	75. family	100. insult ¹

For exploratory work this list serves very well; but for the more refined work of the experimental laboratory it contains some defects. Some of the words, such as bury, are too easily misunderstood. Often the exact meaning of a verb can be made more clear by using the infinitive form. In using such a test the association time as well as the associated word is recorded. For the ordinary routine of examination the stop watch is sufficiently accurate. There has been some debate as to when the watch should be started, if at the beginning of the word or on the accented syllable or at the close of the pronunciation of the stimulus word. For the more precise work of the laboratory, where it is desirable to compare the work of one experimenter with another, standardization of procedure is of course most important, but for the routine of examination, where the purpose is to detect complexes, it is far less signifi-

¹ This list is used here by permission of Dodd, Mead and Co., Inc., publishers of *Studies in Word Association*, by C. G. Jung. This list appears on page vii of the introduction by M. D. Eder.

cant, although it is of course important that an examiner be consistent in his method of timing.

The effect of an aroused complex upon the association response is known to be varied. Any effect is termed a *complex indicator*. These complex indicators may be listed as follows:

1. Prolonged association reaction time.
2. Mere repetition of the stimulus word.
3. Response with a very unusual word.
4. Failure to respond at all.
5. Response with two or more words.
6. Misunderstanding of the stimulus word.
7. Interpolation of "yes" or some other exclamation before or after the reaction.
8. Perseveration in essence or in form.
9. Disturbances of reproduction upon immediate repetition of the stimulus series.
10. Appearance of laughter, crying, coughing or stammering.
11. Whispered response.
12. Senseless reaction (naming some object in the examining room, for example).
13. Reaction time much shorter than average.

Most of these indicators are self-evident. It is also evident that there is considerable possibility for the influence of the investigator's subjective standards, as for example what constitutes perseveration in essence and what constitutes an exceptionally peculiar reaction. But it must always be recalled that this is a diagnostic method and not to be used as here presented for precise work on association with the expectation of comparison with other researches. Just what is to be considered a prolonged association reaction time cannot be stated with great precision. Ordinarily the average association reaction time will be found somewhere about 1.5 or 2.0 seconds with considerable individual difference. An increase of a second or more should be noted as possibly indicative, although

the reactions indicating a complex are likely to vary from the general run of reactions so noticeably as to give little trouble in their selection. The failure to respond, No. 4, may seem incredible to one who has never used the method, but it sometimes happens that the sitter will remain quiet, as if thinking, for fifteen or twenty seconds and then suddenly exclaim that he is unable to think of anything. When No. 2 appears as an indicator the subject will give in response the same word as the stimulus word; sometimes this reaction is prolonged and the subject will explain that he is quite unable to think of anything but just the stimulus word. The reaction with two or more words, No. 5, is very striking. The subject will hurriedly give several words. He may even respond with a sentence.

The misunderstanding of the stimulus word, No. 6, is to be handled with care because of the difficulty of avoiding ambiguity in the selection of words. There are many words which sound very much like other words the correct understanding of which ordinarily depends upon the context, but, where there is no context, differentiation is wholly dependent upon perfect clarity of pronunciation. A very slight distraction or the slightest imperfection in articulation will be sufficient to mislead a wholly normal mind. The supposition of course is that the hysteric misunderstands or fails to hear either because of the influence of the complex or because of the chronically retracted field of consciousness. Perseveration, No. 8, refers to the repetition of the association reaction given to a preceding stimulus word, the response given to one word repeated in response to the next word. While this ordinarily does not continue for more than a couple of words, the perseveration might in some cases continue further. A slightly different form of perseveration is also to be found. In looking down a long list of reactions the observer may note that a certain word or certain words recur with peculiar frequency. Such may also be perseverative effects and possibly indicative of complex disturbance.

Perseveration appears likewise as a continuation of the emotional influence upon succeeding reactions. Some complex indicator, prolonged reaction time for example, may appear in the response to a given stimulus word; and the same indicator may be evident in the response to one or more succeeding stimulus words. While theoretically this form of perseverative effect might appear as some other indicator, it is not ordinarily so observed. Consequently where a somewhat prolonged reaction follows a distinctively prolonged reaction care must be taken in the consideration of that stimulus word. It may not of itself be related to the complex.

The failure to reproduce, No. 9, is likely to impress the inexperienced as improperly exacting, yet it is now looked upon as one of the best of the complex indicators. The procedure is simple although it very greatly prolongs the time necessary for the examination. At the conclusion of the first set of association responses the subject is told that he will be asked to repeat the whole procedure, that the examiner will as before give one after the other the same series of stimulus words and that the subject is to respond with the same associated word that was given the first time. Subjects will as a rule protest that the experimenter is asking the impossible. Then it is necessary to reassure them that while they think they may be unable to recall they will quickly be surprised to discover that they are able to do so, in any event that they are to give in each instance the word which they think they gave the first time. The list is handled as at first with the recording of association reaction time and the words given. A subsequent comparison with the first set of reactions will reveal that in certain instances there were failures to reproduce correctly; sometimes after a long wait the subject will say that he is unable to recall. Often it will be found that these failures to recall coincide with prolonged reactions the first time or some other evidence of a complex. Jung has made much of this failure to reproduce and in a subsequent and very careful experimental study Whately

Smith has concluded that it is the best of all complex indicators. Another experimental study by Hull and Lugoff, however, seemed to indicate that the repetition of the stimulus word is the best indicator.¹

After the completion of the second presentation of the series of stimulus words, the examiner must take some time for the careful examination of the results obtained. The lists and times must be scanned carefully for evidences of complex indicators. Such evidences should be carefully listed for further work with the subject. Sometimes the mere bringing together of these indicative reactions, with the stimulus words producing them, is sufficient to give the examiner a very good clue as to the probable nature of the suppressed material. Then further questioning on those topics or the use of free association procedure with such topics as stimuli should, if the examiner is patient, eventually result in the discovery of the disturbing material. But it must not be supposed that these so-called complex indicators can be treated as a highly exact or precise method. A number of studies have shown the fallacy of such an attitude. It may be that certain words and certain kinds of words and certain arrangements of words produce peculiarities of reaction even where there is no disturbing complex, and it may be that words have their individual coefficients of reaction time which must be taken into consideration before exact uses can be safely considered. At present it must be treated as little more than a preliminary probing or method of exploration, valuable as it has been proved to be for that purpose.

The *association reaction method* has also been used quite without consideration of, or search for, the presence of complexes. Psychologists seem always to have been haunted by the notion of types. Again and again there are attempts to

¹ Smith, W. Whately, *The Measurement of Emotion*. New York, Harcourt, 1922. Pp. 183. Hull, C. L. and Lugoff, L. S., "Complex signs in diagnostic free association," *J. Exper. Psychol.*, 1921, 4, 111-136.

isolate human types or to devise some method for so doing. To this end or to the disproof of its possibility the association reaction method has also been turned. It had been suggested that the associations of a dementia præcox for example were characteristic of the type and were so peculiar that an association reaction test would reveal the difference. The same possibility had been suggested for the manic-depressive. To check these suggestions by experiment Kent and Rosanoff,¹ in a study which has become justly famous, laboriously selected one hundred stimulus words and tabulated the response words given by one thousand adults, selecting their adults from as many different stations in life as possible in order that they might be a fair sample of mature normal minds. In their tables the frequency per thousand of every response word given may readily be discovered. By giving each response word obtained, its frequency figure from the Kent-Rosanoff tables, and totaling the whole, one may discover if the individual gives on the whole commonplace associations or if his responses are inclined to be individualistic. Kent and Rosanoff also applied the method to a large group of insane patients and found that the insane patients gave much more individualistic responses. They also found, be it said, that subjects with a collegiate education gave more individualistic associations than their basic set of one thousand people, although not so highly individualistic as were the reactions of their insane group.

Since that time Gardner Murphy,² by using a slightly modified form of the Kent-Rosanoff list, has proved that the notion of a dementia præcox type or a manic-depressive type of association is a myth. He found that there is no abrupt transition between normal minds and diseased minds when considered from the point of view of their associative responses, and that

¹ Kent, G. B. and Rosanoff, A. J., "A study of association in insanity," *N. Y. State Hospital Bulletin*, 1912, 4, 165-302. The tables for this test will also be found in *A Manual of Psychiatry*, by A. J. Rosanoff, Appendix VI.

² Murphy, G., "Types of word-association in dementia præcox, manic-depressives, and normal persons," *Amer. J. Psychiat.*, 1923, 2, 539-571.

the associations of the abnormal deviate little from the normal. By comparison with associative reactions made on children, he found that the dementia præcox and the manic-depressive cases both were more like normal adults than they were like the reactions of children. Murphy also made several improvements in the Kent-Rosanoff list by eliminating certain words which are either ambiguous or which regularly give rise to vague responses.

A study of the associations of children's minds, similar to that of the Kent-Rosanoff study on adults, was made by Woodrow and Lowell. They used ninety of the Kent-Rosanoff list and in place of the other ten substituted words better adapted to children. They also used one thousand subjects, nine to twelve years of age, and tabulated in the Kent-Rosanoff fashion the frequency per thousand of each response word. It is obvious that these two sets of frequency tables, the Kent-Rosanoff and the Woodrow-Lowell, are invaluable to any who would work with the association reaction method and are a very great contribution to methodology. In comparison with the adult responses tabulated by Kent-Rosanoff, the Woodrow-Lowell¹ tables show that children's associations are very different. There is a marked difference in the frequency of certain types of association; but thirty-nine per cent of the stimulus words gave the same most frequent response word for children as for adults. The children gave far fewer individual responses than did the adults, that is counting as individual responses those response words which appeared with a frequency of but one in a thousand. The number of different words given by the children was much lower.

The question has quite naturally arisen if one could not by classifying the kinds of responses made to association stimulus words discover peculiarities of thought more significantly than by seeking complex indicators or by merely tabulating for

¹ Woodrow, H. and Lowell, F., *Children's Association Frequency Tables*. Psychol. Rev. Monog., 1916, 22, No. 97. Pp. 110.

scores of commonplaceness. It would seem that one ought to be able to classify association responses and thereby discover mental types. Many such attempts at classification have been tried and they reveal such rubrics as contrast associations, supraordinate associations, predicate, definition, egocentric associations, etc. While it is not too difficult to formulate a set of rubrics, it is admittedly often very difficult, if not impossible, to decide into what class a given response should be placed. Wells,¹ who has perhaps done the best work here, makes one group which he calls miscellaneous into which he expects about one half of the association responses to fall. And after all his labor Wells concludes that, save in pathological states manifesting marked deterioration, normal subjects differ among themselves more than abnormal minds differ from normals.

Direct Methods. All of these depend for discovering the complex or disturbing feature in psychoneurotic cases upon some device for the elimination or avoidance of censoring and repressing inhibitions. Most of them utilize some means for producing a high state of abstraction. *Crystal gazing*, or *scrying* as it is occasionally termed, has been somewhat used for the purpose, although it is better known doubtless in company with the ouija board and the rest of the appurtenances of the séance room. The crystal used need not of course be a genuine crystal; ordinarily balls of clear glass are used mounted on a convenient base, and often very good results have been obtained by using merely a glass of water. The subject is asked to sit quietly in a comfortable position, to gaze steadily into the crystal and to relate anything which is seen therein. Hystericals, as has already been learned, abstract easily and so readily become absorbed in gazing into the crystal. After a little time visual hallucinations appear and these are described by the subject, who watches in them the course of events portrayed. From the record of these the content of the complex suppressed

¹ Wells, F. L., "A preliminary note on the categories of association reactions," *Psychol. Rev.*, 1911, 18, 229-233; "Autistic mechanisms in association reaction," *Psychol. Rev.*, 1919, 26, 376-381.

may be discovered. The hypermnesic nature of the hallucinations produced by crystal gazing have long been known. Incidents little noticed or long forgotten reappear in the crystal-produced hallucinations as freely as in dreams, perhaps more so. If the crystal visions are motivated by a complex seeking release and the means of expression are no more free than in dream life, then of course the content must undergo still further analysis because, like the dream, it would be subject to the various mechanisms of distortion or concealment. But if it should prove to be a means of expression less influenced by repressing mechanisms than the dream then it would prove to be by so much a more direct means of discovering the complex.

That the writing mechanism in psychoneurotics may often operate freely apart from the personal consciousness of the owner of the hand and arm used has long been known. Automatic writers have been studied for many years. People capable of automatic writing are supposed to be those whose synthesis is somewhat weak and consequently a dissociated functioning is for them readily achieved. The same conditions which produced the psychopathic symptoms make the *automatic writing* possible. For such purposes the subject is placed in a comfortable position with the writing hand on a conveniently placed table and a pencil in the hand. The attention is then attracted and held on other objects or topics thus permitting the writing hand to toy with the pencil and prearranged paper. In a good case the hand soon begins to write and the writing takes place without the writer being conscious of what is being written, although he may be aware that the hand is moving. In some instances the writer claims to become aware of what has been written only after it is written. Again there is in this much opportunity for free expression, perhaps even more so than in crystal gazing, especially where there is no consciousness of the content of the written. Theoretically this ought to prove a valuable method for discovering the complex. Practically, however, we know far less about its availability as a method because it has been so little used. Per-

haps it has been less used because of a real or fancied difficulty in bringing about the automatic writing. Morton Prince went so far with it as to claim the possibility of introspecting on the unconscious.¹ Many would be inclined to question if his procedure is properly to be called introspection, although it may be a method of discovering that which cannot be voluntarily recalled and that is what is desired of these methods.

Hypnotism is the great method of abstraction, but it was long ago abandoned by the psychoanalysts as a means of discovering the repressed material behind a psychoneurotic symptom.² The procedure for the induction of hypnosis involves the establishment in the subject of certain attitudes or sets, notably that of submission and willingness to do whatever is commanded by the operator. These may interfere with, if not entirely prevent, the achievement of the desired end. While the hypnotic state can be readily established with most hysterics, perhaps, if not probably, because they are hysterics, it does not seem because of the dominant attitudes just mentioned to be a state in which as free an expression could be expected as in either crystal gazing or in automatic writing. It is a state rather of greatly increased suggestibility peculiarly responsive to the wishes or commands of the operator. This heightened suggestibility introduces a disturbing source of error in all that comes out of the hypnotic state: its products may have been suggested to the subject, although unintentionally, by the operator. This is a source of error hard to eliminate without eliminating the hypnotic condition itself. The subject in the hypnotic state may be told to talk freely on the assumption that because of the hypnotized condition the repressing or inhibiting tendencies can be entirely released by suggestion, but if there is danger of the operator's prejudice affecting the course of association in the free association method described above there is much more danger here. The slightest

¹ Prince, M., "An experimental study of the mechanism of hallucinations," *Brit. J. Psychol. (Medical Sec.)*, 1922, 2, 165-208.

² See chapter on hypnotism.

hint or implication on the part of the operator, be it ever so vague and unintentional, is sufficient to direct the course of thought in the hypnotized mind. So must the hypnotic method, attractive at first, be set aside as too full of error for the purposes of personal analysis.

Direct questioning seems to be rising in favor among psychiatrists. This does not mean simply asking the subject to relate his personal history, or to tell all he knows about the cause of his troubles. Such questions could be easily answered without revealing the significant and disturbing influences. Casual questioning of any sort can be easily side-tracked by a defense mechanism. The method of direct questioning is a persistent skillful interrogation directed to the discovery of what the examiner knows must be present in some form. Behind a phobia, for example, there must be the memory of some impulse that is highly disagreeable to the conscious ideals, the ego, and is therefore being concealed. In most cases this is something which involves relations to others or something of a sexual nature. The general circumstances of life and the recent history of the subject will ordinarily give the examiner a clue as to the most probable nature of the material he is after. Then, with this clue and his general knowledge of such cases in mind, he proceeds to press his questions in a kindly but firm and persistent manner. He carefully avoids being led away from the main purpose of his questioning and watches carefully for those places where the subject appears to be starting a digression, for they are clues to be followed up.

The course of such direct questioning must of necessity vary from case to case, but the general principles of the interrogation remain about the same. It is persistent, but it is sympathetic and kindly. Ordinarily it is done in a quiet, confidential manner, and the subject is, where necessary, encouraged to talk, to talk freely, with the assurance that by so doing comfort and relief will certainly come. That this method depends to no small extent upon keenness of observation and adroitness in

the phrasing of questions needs scarcely to be emphasized. But in the hands of a practiced examiner it is ordinarily quite successful.

Analytic methods, especially the indirect ones mentioned in the earlier part of this discussion, can be supplemented by using the apparatus familiar in the psychological laboratory for the methods of expression in the study of feeling. Feeling or emotion is known to be accompanied by many organic changes or activities. Changes in the circulation and distribution of the blood, alterations of the breathing, changes in the patterns innervating the voluntary musculature, and the changes in the electrical conductivity of the body have all been used in the laboratory for the study of the feelings and emotions. It might be reasoned that this could be of assistance in the discovery of the emotion aroused by a disturbing complex. If, for instance, in using the association reaction test it is assumed that the complex indicators are such because of the influence of the emotion aroused by the complex, then it might be possible to supplement the indicators by use of automatic devices for recording the physiological expressions of that emotion, by the application of the plethysmograph, the pneumograph, the automatograph, or the galvanometer. This is done, and to some extent successfully; but it must always be kept in mind that, while hysterical patients like to be fussed with, too much application of apparatus may become annoying in itself and thus productive of conditions far from the state of relaxation required. In the case at least of the changes in electrical conductivity, known as the psychogalvanic reflex, there are many mechanical difficulties and possibly physiological sources of error not yet entirely eliminated. Coriat presents cases in which it seems to have been very helpful, as have also Prince and Peterson.¹ The other methods have also

¹ Coriat, I. H., *Abnormal Psychology*. New York, Moffatt, Yard and Co., 1921. Part I, chaps. II, III, IV, IX. Prince, M. and Peterson, F., "Experiments in psychogalvanic reactions from co-conscious (subconscious) ideas in a case of multiple personality," *J. Abn. Psychol.*, 1908-09, 3, 114-131.

been tried as aids to the discovery of the presence of emotion aroused by the course of free association, but the tendency is decidedly toward a reliance upon the independent use of the complex indicators listed above.

Psychotherapeutics. When the psychogenic factors of some form of mental abnormality have been discovered, the next step is naturally that of removing the cause of the trouble. For this there are many systems and schemes. Many of these are unfortunately not even in print. The earlier Freudian method centered upon the bringing to consciousness of the repressed and disturbing material. It was believed that by bringing back to consciousness the details of the memories of those experiences which had entered into the causation of the symptoms the accompanying or attached libido would be released and that, in consequence, the symptoms would disappear. This was known as catharsis of the repressed libido. It is commonly referred to as an *abreaction*.

The complex, it will be recalled, is supposed to be dynamic, to have its own charge of affect, and this needs to be released. Then, if by a process of analysis the resistance can be temporarily relaxed, there should be a consequent release of the canned-up energy of the complex and therefore a cure. The technique of the analysis in the hands of many analysts has been designed to this end and has been based upon this principle or assumption of an imprisoned libido charge. Jung, however, has led a branch of the psychoanalytic movement which has insisted upon the inadequacy of merely bringing the content of the complex to the consciousness of the individual sufferer; in other words, they argue that merely bringing to the knowledge of the patient the facts behind his symptoms, while it may be helpful, is insufficient. According to the Jung school, the trouble is yet more complicated. In focusing attention upon the buried complex and its effects too little attention has been given to the problem of readjusting the patient to the realities of life. As a consequence of an inadequate adjustment the pa-

tient has not only developed and repressed a complex but has continued to build a distorted life around this maladjustment. The mere bringing of the repressed material then to consciousness does not entirely readjust the patient to life; it is but the beginning of the process. What the patient needs is a re-education. He needs to have different and healthier attitudes and interpretations established. So the Jung school has centered its therapy largely upon this problem of readjustment to life and the Freudian school to the discovery of the complex. If there is any truth at all in the claims of the psychogenetic schools of interpretation these two schools of therapy must obviously supplement each other. The complex must be discovered as a step in the readjustment of the individual so that his behavior may be more normal. Then if there are, as in most cases there must certainly be, many other incidental and accessory attitudes and habits of an undesirable nature, these must be replaced by the more desirable. It becomes then not only a process of discovering and developing an unusually elaborate anamnesis or case history but also a perhaps equally elaborate process of re-education.

In the course of psychoanalysis for the release of repressed or fixated libido, there often appears a marked affection for the examiner or psychoanalyst. It is this which has already been described as *transference* (chap. II). The released libido is supposed to swing outward to the analyst. Then an important part of the work of psychotherapy by this method, and in this scheme of thinking, is to direct the flow of the libido on to the relatives, friends, community, etc., into its healthy adult patterns.

It must be recognized further that this program of discovering the complex, the reduction of the conflict, and the reorganization of the individual subject must apply primarily to those cases which are predominately psychoneurotic, or to whatever is psychoneurotic in any given case. Obsessions, compulsions, phobias, and the many forms of hysterical disturbance

are now being frequently treated with marked success by such means as these. But as the psychological pattern of the psychoses differs in certain important features from that of the psychoneuroses a different procedure for them is necessary.

Those who find much that is distasteful or unacceptable in psychoanalytic ways of thinking still find much of value in the procedures of confession and re-education. One may entirely abandon the concepts of catharsis and abreaction and still find, as many competent psychiatrists do, much therapeutic value in aiding their patients to a thorough overhauling of their habits of interpretation, their attitudes toward themselves and toward others, and also of their beliefs about their own acts and impulses to action. This is done through quiet conversation. Apparently the mere telling, confession, of their troubles to someone else, and the frank consideration under intelligent and wise guidance of the most secret parts of the self bring about a better organization of the personality and a focalization of response patterns which make for better, healthier, and more comfortable living.

While psychotherapeutic procedures appear to be more frequently successful with psychoneurotic cases, dramatically successful work is now often done with cases of schizophrenia. The procedure is that of the confidential interview supplemented by skilled supervision and guidance. The theoretical basis for this varies somewhat but must of course rest upon some one or other of the psychogenic interpretations. In terms of the psychoanalytic, or modified psychoanalytic theory, it is assumed that the ego has retreated, given up the task of control, and that the conscious life is largely dominated by impulses from the unconscious.¹ The re-education must then take the form of a persistent stimulation and development of the ego. It must be encouraged and guided from one small achievement to another until confidence in the self is re-established and the

¹ Freud, S., "Neurosis and psychosis," *Collected Papers*, Vol. II, pages 250-254.

tient has not only developed and repressed a complex but has continued to build a distorted life around this maladjustment. The mere bringing of the repressed material then to consciousness does not entirely readjust the patient to life; it is but the beginning of the process. What the patient needs is a re-education. He needs to have different and healthier attitudes and interpretations established. So the Jung school has centered its therapy largely upon this problem of readjustment to life and the Freudian school to the discovery of the complex. If there is any truth at all in the claims of the psychogenetic schools of interpretation these two schools of therapy must obviously supplement each other. The complex must be discovered as a step in the readjustment of the individual so that his behavior may be more normal. Then if there are, as in most cases there must certainly be, many other incidental and accessory attitudes and habits of an undesirable nature, these must be replaced by the more desirable. It becomes then not only a process of discovering and developing an unusually elaborate anamnesis or case history but also a perhaps equally elaborate process of re-education.

In the course of psychoanalysis for the release of repressed or fixated libido, there often appears a marked affection for the examiner or psychoanalyst. It is this which has already been described as *transference* (chap. II). The released libido is supposed to swing outward to the analyst. Then an important part of the work of psychotherapy by this method, and in this scheme of thinking, is to direct the flow of the libido on to the relatives, friends, community, etc., into its healthy adult patterns.

It must be recognized further that this program of discovering the complex, the reduction of the conflict, and the reorganization of the individual subject must apply primarily to those cases which are predominately psychoneurotic, or to whatever is psychoneurotic in any given case. Obsessions, compulsions, phobias, and the many forms of hysterical disturbance

are now being frequently treated with marked success by such means as these. But as the psychological pattern of the psychoses differs in certain important features from that of the psychoneuroses a different procedure for them is necessary.

Those who find much that is distasteful or unacceptable in psychoanalytic ways of thinking still find much of value in the procedures of confession and re-education. One may entirely abandon the concepts of catharsis and abreaction and still find, as many competent psychiatrists do, much therapeutic value in aiding their patients to a thorough overhauling of their habits of interpretation, their attitudes toward themselves and toward others, and also of their beliefs about their own acts and impulses to action. This is done through quiet conversation. Apparently the mere telling, confession, of their troubles to someone else, and the frank consideration under intelligent and wise guidance of the most secret parts of the self bring about a better organization of the personality and a focalization of response patterns which make for better, healthier, and more comfortable living.

While psychotherapeutic procedures appear to be more frequently successful with psychoneurotic cases, dramatically successful work is now often done with cases of schizophrenia. The procedure is that of the confidential interview supplemented by skilled supervision and guidance. The theoretical basis for this varies somewhat but must of course rest upon some one or other of the psychogenic interpretations. In terms of the psychoanalytic, or modified psychoanalytic theory, it is assumed that the ego has retreated, given up the task of control, and that the conscious life is largely dominated by impulses from the unconscious.¹ The re-education must then take the form of a persistent stimulation and development of the ego. It must be encouraged and guided from one small achievement to another until confidence in the self is re-established and the

¹ Freud, S., "Neurosis and psychosis," *Collected Papers*, Vol. II, pages 250-254.

power to dominate is restored. The negativism of the catatonic is thought of as protective. Consequently the negativism, resistance as it is sometimes termed, must be penetrated by persistent and insistent effort, and the patient drawn gradually out into social contact and responsiveness. As this takes place, the observer is privileged to see a marked transformation of the personality manifested. There is more and more participation in the affairs of the immediate environment, more and more ambition and interest appear, and with these changes the negativism and the delusions and hallucinations gradually disappear. That all this calls for consummate skill in conversation and direction must be obvious. What is actually said to the patient must of necessity vary from case to case, but the general plan is about as outlined in all.

It must not be thought that even the most skilled of psychiatrists can restore all schizophrenias to the same patterns of normality which prevail in those who have never been schizophrenic. Sometimes remarkably complete cures are achieved, but many retain scars of the experience long after they have been restored to the responsibilities and obligations of life. This is not to be wondered at nor deprecated. People who have suffered serious organic diseases are frequently not quite the same afterward although they may be said to have recovered their health.¹

Range of Psychotherapeutic Application. The other mental abnormalities are either so largely organic in nature as to preclude the possibility of much utilization of psychotherapeutic attack or they have so far proved to be quite resistant to known

¹ A good introduction to the literature may be had through the following: Clark, L. P., "Treatment of narcissistic neuroses and psychoses," *Psychoanal. Rev.*, 1933, 20, 304-326. Malamud, W. and Miller, W. R., "Psychotherapy in the schizophrenias," *Amer. J. Psychiat.*, 1931-32, 11, 457-480. (Has a good bibliography.) Sullivan, H. S., "The modified psychoanalytic treatment of schizophrenia," *Amer. J. Psychiat.*, 1931, 11, 519-540. Williams, T. A., "The common principle in differing psychotherapeutics," *J. Abn. & Soc. Psychol.*, 1932, 27, 105-110. Zilboorg, G., "The deeper layers of schizophrenic psychoses," *Amer. J. Psychiat.*, 1931, 11, 493-511.

psychotherapeutic methods. Senile troubles must be in large part of organic origin and yet by utilization of such methods of reorganization and adjustment as have been outlined above some progress has been made in the prolongation of efficiency and happiness.¹ Paresis is now being quite successfully treated by the production of high body temperatures and little psychotherapeutic effort appears to have been expended upon it. However, where only arrest of the disease is possible it may be that some psychotherapeutic work might be of assistance in the social restoration of the individual especially if psychoneurotic developments had come into being along with the organic disease effects. The manic-depressive psychoses appear to be the next great field for psychotherapeutic effort, but so far not much progress has been made in the treatment of them by these methods. Some psychiatrists claim progress, but others practically admit defeat.² Little seems to have been achieved by psychotherapeutic methods in the treatment of epilepsy. Some psychiatrists would earnestly contest this³ while others, especially those who think of the epilepsies in purely organic terms, would contend that there is no place for psychotherapy in the treatment of epilepsy. But, if there be much that is psychoneurotic in any of the epilepsies, then it would be reasonable to suppose that a combination of psychotherapeutic procedures with the various medicinal therapies might be profitable. Many now believe that the involutional troubles are primarily functional reactions to the organic changes that are taking place, and many such cases are now being treated by much the same sort of psychotherapeutic re-education or readjustment as was outlined above for the psychoneuroses.

¹ Martin, Lillian J. and deGruchy, C., *Salvaging Old Age*. New York, Macmillan, 1930. Pp. 173. Martin, L. J., *Sweeping the Cobwebs*. New York, Macmillan, 1933. Pp. 183.

² Dooley, Lucile, "A psychoanalytic study of manic-depressive psychosis," *Psychoanal. Rev.*, 1921, 8, 38-72.

³ See presentation of the theory and work of L. Pierce Clark in the discussion of epilepsy in chapter XI.

SELECTED REFERENCES

- Clark, L. P., "Treatment of narcissistic neuroses and psychoses," *Psychoanal. Rev.*, 1933, 20, 304-326.
- Crosland, H. R., *The Psychological Methods of Word-Association and Reaction-Time as Tests of Deception*. Univ. Ore. Pub., Psychol. Ser., 1929, 1. Pp. 104.
- Djerine, J. and Gauckler, E., *The Psychoneuroses and their Treatment*. Phila., Lippincott, 1913. Pp. 395.
- Franz, S. I., *Handbook of Mental Examination Methods*. New York, Macmillan, 1919. Chap. VII.
- Hull, C. L. and Lugoff, L. S., "Complex signs in diagnostic free association," *J. Exp. Psychol.*, 1921, 4, 111-136.
- Janet, P., *Principles of Psychotherapy*. New York, Macmillan, 1924. Pp. 322.
- Janet, P., *Psychological Healing*. London, Allen and Unwin, 1926. 2 vols.
- Jung, C. G., *Studies in Word Association*, etc. New York, Moffatt Yard, 1919. Pp. 575.
- Kohs, S. C., "The association method in its relation to the complex and complex indicators," *Amer. J. Psychol.*, 1914, 25, 544-594.
- Loring, M. W., "Methods of studying controlled word associations," *Psychobiol.*, 1918, 1, 369-428.
- Malamud, W. and Miller, W. R., "Psychotherapy in the schizophrenias," *Amer. J. Psychiat.*, 1931-32, 11, 457-480.
- Oliver, J. R., *Fear*. New York, Macmillan, 1927. Pp. 366. (Includes narrative presentation of modern psychiatric method.)
- Pfister, O., *The Psychoanalytic Method*. New York, Moffat Yard, 1917. Chap. XII.
- Prinzhorn, H., *Psychotherapy, its Nature, its Assumptions, its Limitations*, etc. London, Cape, 1932. Pp. 352.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Pp. 697. (Kent-Rosanoff tables in appendix VI.)
- Sullivan, H. S., "The modified psychoanalytic treatment of schizophrenia," *Amer. J. Psychiat.*, 1931, 11, 519-540.
- Swartz, B. K. and Crosland, H. R., "The effects on reaction-time of various orders and distributions of relevant stimuli in the word-association experiment," *J. Gen. Psychol.*, 1933, 8, 217-271. (Includes excellent bibliography.)
- Williams, T. A., "The common principle in differing psychotherapeutics," *J. Abn. & Soc. Psychol.*, 1932, 27, 105-110.
- Zilboorg, G., "The deeper layers of schizophrenic psychoses," *Amer. J. Psychiat.*, 1931, 11, 493-511.

CHAPTER XIX

MENTAL EFFECTS OF DRUGS

ALCOHOL, TOBACCO, CAFFEIN, MORPHIN AND COCAIN,
MESCAL, ANESTHETIC DRUGS.

Many alterations of the mental life are produced by the voluntary introduction into the body of one or more substances usually listed as drugs. Toxic conditions developing within the body will, as has already been indicated, produce delirious states. But it is now important to consider the effect upon mental life of those toxic substances which do not develop within the body but come from without, exogenous toxins. The effects of some of these drugs has been determined by careful experimentation and systematic observation, but of others relatively little is yet known with any degree of certainty. In the following presentation not only the direct or immediate effect of the drug upon mental processes will be presented but also the subsequent effect upon character traits of the continued use of the drug. And as far as possible there will also be presented something of the psychological background leading up to the use of the drugs, the motivation which results in drug habits.

Alcohol. Ethyl alcohol, or ethanol, as probably all readers know, is the active ingredient of wine, whiskey, beer, etc., of all the so-called alcoholic drinks. Within recent years there have been some very elaborate experimental studies made to determine accurately the effect of imbibing small doses. Among the most significant of these are the studies made by Dodge and Benedict, supplemented and checked by the work of Miles, at the Nutrition Laboratory of the Carnegie Institution.¹ They

¹ Dodge, R. and Benedict, F. G., *Psychological Effects of Alcohol*. Washington, Carnegie Inst., 1915. Pp. 281. Miles, W. R., *Alcohol and Human Efficiency*. Washington, Carnegie Inst., 1924. Pp. 298. Emerson, H. (Ed.), *Alcohol and Man*. New York, Macmillan, 1932. Pp. 451.

found that the lower nervous centers are depressed most by small doses and the higher centers least. Simpler movements suffer more than the higher intellectual processes. The greatest effect of the ingested alcohol was found in the knee-jerk, which was delayed and reduced in extent. The least effect was found in the tests of speech responses and of memory. They also pointed out that the mild amount of depressant effect found in the few higher processes tested was possibly due to the effort made by the subjects to offset the alcohol effect. Probably there is much truth in this suggestion. It has been found that by effort one can shake off the effect of a very considerable amount of fatigue, and the sobering influence of critical situations upon intoxicated minds has often been related. The same effect of extra effort vitiated the use of mental tests as a means of discovering the effect of loss of sleep. Hollingworth subsequently published a more elaborate study of the effect of alcohol on mental processes which finally answered any question as to the effect of alcohol on the higher mental processes being other than depressing. He found this depressant effect clearly shown in tests of steadiness, rate of tapping, color naming, naming of opposites, adding and learning. The amount of the effect varied directly as the amount of the dose given.¹

In these studies a slower recovery seems to be indicated in the lower level functions. The resistance to the alcohol effect seems to be correlated positively with the general physical and mental competence of the subject. Those who were more capable of improvement were apparently less influenced by the alcohol.

It has been well established that alcohol increases the pulse rate. This is doubtless one of the changes which has led to the notion, still current, that alcohol is a stimulant. The explanation is to be found in the depressing effect upon the inhibitory or controlling factors in the central nervous system. This per-

¹ Of the generally depressant effect there is now no question. It has been demonstrated repeatedly. But there is some uncertainty over the possibility of a brief initial stimulating effect.

mits the heart, and probably many other functions, a greater freedom of action, which looks superficially like stimulation. So far as experimental evidence is available the net result is that alcohol has a depressant effect upon the functioning of the central nervous system.

Through this depressant effect one finds the explanation of the more elaborate picture of mental disturbance produced by progressive alcoholic intoxication. The psychoanalysts have ceaselessly called our attention to the mass of inhibitions built up in every person trained in modern civilized society. These we commonly speak of as self-control. They are in effect inhibitory mechanisms. When these are depressed by alcohol, the individual is released from his reserve and conscientiousness. Apparently also the depressing effect early dulls the subject to the more delicate shades of feeling. The trials and cares of life in such a state of mind slip away or are minimized, attention seems confined to the things of the moment and not very closely confined at that because it wanders with facility from one thing to another. The tongue is loosed to the point of revealing secrets which would be closely kept but for the alcohol. There is gayety to the point of boisterousness. As the intoxication progresses there is a notable disturbance of control in the finer skilled movements. The speech becomes thick, the finger movements clumsy, and gradually there is disturbance of even the larger and older coördinations of carriage and balance. While in this middle stage of intoxication the emotional release becomes more evident, and there is what the psychoanalysts would call a regression. Some subjects become ludicrously affectionate, others become surly and very bad tempered. Whatever emotion is aroused finds unhampered expression; tears, laughter, anger follow each other with ease. There is an obvious dulling of sensitivity and disturbance of perception. As the course of intoxication continues eventually the more basic coördinations are lost and the subject can no longer walk, but staggers and eventually falls, unable to rise. Con-

sciousness disappears in sleep, or narcosis, from which the subject eventually awakes with headache and the oft-described remorse and depression of the morning after.

Delirium tremens, well known as an alcoholic disturbance, differs in many ways from the ordinary course of intoxication and contains many features of psychological interest. It is an episode in chronic alcoholism brought about by some complicating conditions either psychic or physiological or both. The delirium and the muscle tremor, from which the condition obtained its name, are conspicuous. Some other aspects must be watched for more carefully. The delirium is often occupational; the subject has some business to attend to which he is going about with extraordinary activity. Often the delirium is persecutory in nature; the subject is tormented by threatening human beings or animals or something which is accompanied by great terror. Hallucinations are many and active. Snakes, spiders, rats, and larger creatures, sometimes of a fantastic nature, populate the surroundings or crawl over the body. Auditory hallucinations seem not so frequent. The subject is obviously living in a very active and very unpleasant dream world. From this he can be aroused by persistent effort, but for a brief time only; immediately upon cessation of the effort the delirium returns. It is interesting to observe that the orientation for time and place is lost, but the subject is still himself although in an abnormal dream world. The ordinary recoverable case does not last more than three or four days.

There is another form of alcoholic diseased condition allied to delirium tremens but differing from it in certain significant features. It is known as *acute hallucinosis* and presents excellent examples of hallucinations of many modalities. The actual causation of these hallucinations seems not clear, although they are ordinarily attributed directly to the alcoholic poisoning. To the student of hallucinatory theory this raises many problems. This state differs from delirium tremens in being of much longer duration and it is a much less disordered condition of mind. The patient remains oriented. The outstanding fea-

tures are the painful hallucinations, notably auditory, and the persecutory delusions, which tend to become systematized. The auditory hallucinations are of voices, sometimes several at once, calling him evil names, shouting unjust accusations, producing a horrible turmoil. Sleep is much disturbed.

One other form of alcoholic disturbance is worthy of attention because it presents primarily a disturbance of memory. This is known as the *Korsakoff syndrome* or as Korsakoff's disease. It usually appears on a basis of chronic alcoholism, although it sometimes appears where there is no alcoholic history as the consequence of a cerebral accident or of an infectious disease. There is a notable disturbance of impressionability. The subject will not be able to recall a few minutes after eating breakfast that he has had any breakfast, and so through the day do experiences fail to make impressions which are recallable. There is also a disturbance of recall for events prior to the illness. This amnesia is not complete, and disappears with recovery from the disease. Such a memory disturbance is accompanied, as might be expected, by disorientation for time and place. There is also a notable fabrication of pseudomemories which fill the gaps in the actual recall. There is a marked facility in the development of such defenses and they can be readily modified by suggestion. Emotionally the individual appears more or less indifferent; sometimes the feelings are agreeable or there may be a slight irritability. In this respect the state is quite different from either the acute hallucinosis or delirium tremens.

The foregoing forms of alcoholic disturbance indicate that the nature of the disturbed mental states is not to be found entirely in the selective effects of the drug habitually ingested. The psychology of the individual ingesting the drug is also a markedly influential factor in the content and course of the mental processes involved.¹ This becomes still more evident in

¹ Lindemann, E. and Malamud, W., "Experimental analysis of the psychopathological effects of intoxicating drugs," *Amer. J. Psychiat.*, 1934, 13, 853-881.

the condition known as *dipsomania*. It is a condition in which there occurs more or less regularly an overwhelming desire for drink. It may be fought for a time, but eventually the victim gives way and drinks himself into insensibility. But dipsomania cannot be attributed entirely to alcohol. There is a basis of instability, perhaps even of an epileptic nature. It may be an hysterical seizure of some variety, or it may be based on some psychasthenic phenomenon. Whatever be the cause, and this should be worked out by careful study and observation, it is such as to bring about a mad desire for relief. As the subject is accustomed to find relief in alcoholic intoxication, it is alcohol which is so dominantly and compulsively desired. This very domination and compulsion is indicative of a psychoneurotic condition.

The *alterations of character traits* as the consequence of chronic alcoholism have been so often presented in prohibition campaigns it may perhaps be unnecessary to review them. But it is important to think of them in terms of general psychology and, for the time being, apart from their ethical and social significance. Judgment deteriorates or changes and the habitual drunkard becomes dominated by habit patterns which result in very different opinions and conclusions. This is allied to emotional changes. The habitual drunkard becomes indifferent to personal appearance, ideals, the requirements of his family, and the considerations of public decency. Inhibitions are weakened and he will give way to violent outbursts of temper and other emotions. The occasional periods of clearing up and the therefore inevitable remorse are notorious, but the lapse from the good resolves made in these periods is also well known. With the progress of chronic alcoholism the capacity for new impressions seems increasingly limited. This means a limitation in the range of thought, which reacts upon the capacity for judgment, upon the emotions aroused and upon the emotional control. The inevitable consequence is a dementia which is slowly progressive with the continued use of the drug.

Why alcoholic liquors are used at all has long been a problem for speculation. The taste is not as a rule agreeable, certainly not at the outset. Conviviality is almost invariably listed in the literature as an outstanding cause. To drink and to eat together is a long-standing mode of expressing hospitality and good feeling. So the depressant effect of a little alcohol is resorted to as a means of bringing about or heightening the feelings of euphoria desired. Often it is resorted to when what is really needed is food. Many feel it necessary to drink at certain regular intervals between meals in order to keep going. The desire in many such cases has been traced to insufficient feeding or improper feeding, with the inevitable consequence that the person is hungry. This is quieted by alcohol and with a few repetitions the habit becomes established and the individual thinks he needs it at those regular intervals.

Patrick has argued¹ that the development of the use of alcohol was due to the desire for relaxation from the strain of modern civilization. This is of a piece with the contemporary, but more far-reaching, notion of retreat from reality emphasized by the psychoanalysts. There are two possible ways of reacting to any given problem of life. One is to face the problem, attack it squarely and achieve the best possible result. Then if the result is not wholly satisfactory frankly recognize the facts of the situation and make the next best possible move. The other possible reaction is to avoid the problem, run away from it by some means. In the chapter on sleep, cases were mentioned where people had developed abnormal tendencies to sleep which proved to be but flights from reality, means of avoiding some unsatisfactory situation in life. So some of the major forms of mental disease were interpreted. There seems to be a very prevalent tendency to retreat. The depressant effect of alcohol is thus an easy means of turning the edge of the disagreeable present and bringing about a flow of euphoria when the individual should be facing the reality, even though

¹ Patrick, G. T. W., *The Psychology of Relaxation*. Boston, Houghton, 1916. Pp. 280.

unpleasant. This is but another and more inclusive way of saying that vast numbers of individuals drown their sorrows in alcohol. It is akin to the suicide motive, which is also a retreat from reality.

It is illuminating to observe that a comparatively small percentage of suicides are directly due to alcoholism. Apparently intoxication drowns the sorrows which might otherwise lead to suicide. But a rather high percentage of abortive attempts at suicide are due to alcoholism.¹ Apparently some sensory or hallucinatory process diverts the attention and prevents the carrying out of the suicidal impulse effectively.

This motive of retreat dominates more easily where the individual is nervously unstable. The percentage of any population which is psychoneurotic in some form is probably very large. And then there are the many possible varieties of constitutional psychopathy as well as those in the incipient stages of some one of the psychoses. Add to these the feeble-minded and one can begin to comprehend something of the vast number of those who must frequently lack the capacity to face reality in any adequate fashion, to whom any avenue of retreat is attractive at least occasionally. The alcohol avenue is simple and to the minds of such people appears to be comparatively harmless. If the statements made concerning the increase of traffic in narcotic drugs with the spread of prohibition are to be accepted at their face value, or any part of it, then where prohibition prevails there is an apparent turning away from alcohol to narcotic drugs as a mode of retreat. The psychoanalysts go even further² and point out that the effect of alcoholic intoxication is in part that of breaking down sublimation, hence the homosexual tendencies and the more primitive emotionalism of the intoxicated mind.

An interesting and arresting proposal made by McDougall³

¹ Sullivan, W. C., "Alcoholism and suicidal impulses," *J. Ment. Sci.*, 1898, 44, 259-270.

² Clark, L. P., "A psychological study of some alcoholics," *Psychoanal. Rev.*, 1919, 6, 268-295.

³ McDougall, Wm., *Outline of Abnormal Psychology*, pp. 442-449.

is to the effect that alcohol may be thought of as an extraverting drug. It is his belief, based upon some experimental work, that the frequency of change in illusions of reversible perspective (staircase, open book, windmill, etc.) is indicative of the degree of extraversion or introversion. A slow rate of alternation is presented as characteristic of extraversion and a rapid rate of alternation as characteristic of introversion. Alcohol (also ether and chloroform) apparently produces a reduction in the rate of this alternation, a change in the direction of extraversion, hence the statement that alcohol is an extraverting drug. An inevitable corollary of this is that an extraverted person would more easily manifest the familiar signs of alcoholic intoxication than would an introvert, because the normal introvert is by nature farther removed from such behavior and must therefore undergo more alteration through the ingestion of alcohol before intoxicated behavior will appear. Applying this to other concepts of personality it would follow that a cyclothymic personality would be more easily intoxicated by alcohol than would a schizothymic personality.

Alluring as this thesis may be, the experimental studies have not so far given it unqualified support. There are many difficulties to be overcome before experimental proof or disproof will be possible. Not the least of these is the measurement of those differences called extraversion and introversion.¹

Tobacco. While tobacco is best known as it is used in smoking and chewing, it has also been used in the form of snuff and even made into a beverage. Some years ago there was much discussion over the effect on the chemical composition of to-

¹ An introduction to this literature will be found through the following, in addition to McDougall's own presentation: Ewen, J. H., "The psychological estimation of the effects of certain drugs upon syntonetic and schizophrenic psychoses," *J. Ment. Sci.*, 1931, 77, 742-766. Hollingworth, H. L., "Experiments on susceptibility to drugs," *Amer. J. Psychol.*, 1931, 43, 139-144. Hunt, J. M. and Guilford, J. P., "Fluctuation of an ambiguous figure in dementia praecox and in manic-depressive patients," *J. Abn. & Soc. Psychol.*, 1933, 27, 443-452. Smith, M. and McDougall, Wm., "The effects of alcohol and some other drugs during normal and fatigued conditions." London, H. M. Stationery Office, 1920.

bacco by burning. It now seems to be generally accepted that in whatever form tobacco be used the significant drug is the nicotin. The literature on the effects of smoking is enormous, but much of it is of little importance scientifically because of its definitely polemical nature. Fortunately there is now a considerable body of careful experimental work the results of which, so far as they go, present a fair degree of agreement. The physiological effects of smoking, especially if the smoke is inhaled, are admittedly bad before the individual has achieved physical maturity. After maturity the physical effects apparently depend upon a variety of physical conditions combined with the amount of the indulgence and the manner of smoking. That there is marked stimulation of the pulse which continues for some time after smoking, that the heart is more susceptible to excitement after smoking, and that these are probably indicative of a depressant effect upon inhibiting mechanisms seems to be pretty well established. Macht, Bloom and Ting¹ found that nicotin had a clearly depressant effect upon the behavior of rats in a maze.

The great difficulty with most experimentation on the effects of tobacco smoking had been the lack of a proper control. The usual practice had been to have as control periods merely periods of rest without smoking. This could never rule out the effect of suggestion. Satisfactory experimentation awaited the development of a technique whereby the subjects would never know whether they were working under the effect of tobacco smoking or not. Hull achieved this in a most skillful manner.² He was able to produce the full illusion of having smoked a pipe when actually the only possible effect of tobacco was a slight effect of odor. Thus his results are far more reliable than any preceding. The mental effects which Hull succeeded in

¹ Macht, D. I., Bloom, W. and Ting, G. C., "Comparative study of ethanol, caffeine and nicotine on the behavior of rats in a maze," *Amer. J. Physiol.*, 1921, 56, 264-272.

² Hull, C. L., "The influence of tobacco smoking on mental efficiency," *Psychol. Monog.*, 1924, 33, No. 3, 1-160. (Includes excellent bibliography.)

demonstrating are so slight and insignificant as to be negligible. Cancellation tests showed no measurable effect; there was probably a minute increase in the speed of reading; there was no effect on the accuracy of mental addition; there was probably a loss in the auditory memory span, and there was probably a loss in rote learning. Certainly these are not very serious nor of any great advantage. The only marked gain was found in the rate of mental addition. Hull did find a large increase in manual tremor and this is in accord with the studies of Carver and Bates,¹ which show evidence of disturbance of the finely co-ordinated reactions.²

Many attempts have been made to discover if a correlation exists between *school grades and smoking*. The custom is to obtain the grade average for a group of smokers and compare that with the grade average for a group of non-smokers. Figures so obtained usually indicate that non-smokers make the higher grade average. This result must be taken with very great caution. The unreliability of grades as a measure is notorious. Many factors contribute to the grade obtained. It is true that much progress has been made in recent years in the development of methods for the determination of grades which are far more accurate than the old traditional procedure, but it is also true that most of these studies on the relationship of smoking were made before the modern crusade for improved grading systems. The most that can be safely said concerning these studies is that smoking habits and lower grades are usually associated. It cannot be said that tobacco is the cause of the lower grades. Studies of the intelligence test scores of smokers

¹ Bates, R. L., "The effects of cigar and cigarette smoking on certain psychological and physiological functions," *J. Comp. Psychol.*, 1922, 2, 371-424, 431-505; 1923, 3, 37-49. Carver, D. J., "The immediate psychological effects of tobacco smoking," *J. Comp. Psychol.*, 1922, 2, 279-302.

² That a certain degree of tolerance develops for the effect of nicotine is generally admitted and allowed for in experimental work, but of the nature and behavior of this tolerance very little is yet known. See Rizzolo, A., "L'effet de la nicotine sur l'excitabilité de la substance blanche," *C. r. Soc. biol.*, 1928, 98, 132-134; Winsor, A. L., "The effect of cigarette smoking on secretion," *J. Gen. Psychol.*, 1932, 6, 190-195.

in comparison with non-smokers do not reveal any startling difference, some have even indicated a slightly higher score average for the smokers. The reason for the association of smoking and lower grades is probably to be found in the home influence, the general social situation, and the personality type of the individual. The boy with introvertive tendencies who does not mix readily with others might be far less likely to acquire the tobacco habit than the boy with extravertive tendencies who belongs to a string of societies and fraternities. Likewise the boy with introvertive tendencies might have more time to apply to his lessons than the boy whose time is absorbed by his social obligations.¹

One cannot wisely pass by all of the nonscientific literature on smoking. The violence and the prejudiced handling of data in some of it suggest an over-determination which might be interesting to analyze. But it is to the non-polemical literature of tobacco that one must turn for further knowledge of its mental effects. Here the reader will find the charms of the pipe and the cigar and the cigarette sung in a thousand ways. The pipe is the soothing friend and comforter. In the smoke of the cigar are charming castles built. A good cigar brings peace to the troubled mind. By puffing a cigarette the novel is written, the problem solved. This cannot be all delusion even though a host of great creative names can be listed of those who did not smoke. Burnham² has shrewdly pointed out the place that smoking sensations play in conditioned behavior. That human behavior is easily conditioned to new patterns of stimuli is now well demonstrated. And it is also true that man clings to those patterns of stimuli which by experience have proved effective in his productive work, and he avoids changes from them which annoy.

¹ Earp, J. R., *The Student Who Smokes* (2nd. ed.). Yellow Springs, Antioch Press, 1926. Pp. 61; "Tobacco and scholarship," *Sci. Mo.*, 1928, 26, 335-337.

² Burnham, W. H., "The effect of tobacco on mental efficiency," *Ped. Sem.*, 1917, 24, 297-317.

Many creative minds can do excellent work in their own studies or libraries with the familiar desk and chair and environment of books and litter. In another chair before another desk with a different pattern of books and litter they are annoyed and unproductive. The sensations of smoking, once established in association with certain desired states of mind, whether of work or of relaxation, become necessary parts of the general pattern which facilitates the production of that state of mind. Hence many men do their best work while smoking because, like the desk and the books and the litter, the sensations of smoking are necessary features of the pattern which brings about productive mental activity. Relaxation, quiet, peace, meditation, the resting state of mind, the occasional experience of which is so beneficial if not necessary to efficient living, is in many people largely conditioned to the group of smoking sensations. Nonsmokers who relax and meditate are conditioned for this state to another group of stimuli to which the intrusion of tobacco smoke may be a serious disturbance. So the bliss of smoking, so often described with dithyrambic enthusiasm by its devotees, may be merely the bliss of relaxation and contemplation, aided a little perhaps by the depressant effect of nicotin, produced by a pattern of stimuli in which the sensations of smoking are the most obvious feature. The same peace and pleasure in relaxation are aroused in many by the open fire in an unlighted room and the open fire is responsible for a vast amount of literature, perhaps as much as tobacco.

Of the *after-effects of tobacco* little can be said. If used in excess and at too early an age pathological conditions of body develop which limit and condition the course and nature of mental development. But to conclude that juvenile delinquents are delinquent because they smoke cigarettes is not a sound generalization. It is more likely that they smoke cigarettes for the same reason that makes them delinquent. The two are to be thought of as in an associative relation and not a causal relation. The excessive smoking of cigarettes by a

youth may of course be a contributing factor to delinquency. The methods resorted to in order to obtain the tobacco and the associations while smoking produce habits which result in conflicts which become in turn the motivations for antisocial conduct. But in explanation it is necessary to go behind the smoking to determine the cause.

The assertion sometimes made by enthusiasts that smoking leads to alcohol and alcohol to drugs is a most superficial generalization, because it ignores the psychology of the smoker and of the drinker. All these drugs are depressant, but many habitual smokers and many habitual moderate drinkers have ideals and inhibitions too well established ever to permit the one drug to lead to the next. The vast number of smokers who never drink or use narcotic drugs should be sufficient answer to such rash generalizations. Where it is true that a smoker has gone to excess in drinking and from that to narcotic drugs, the cause is to be sought not in the drug but in the condition or state of mind from which there was such a frantic attempt to escape.

That the use of tobacco is often and easily associated with the meditative, relaxed, quiescent mental states may be variously evaluated. Some may think such withdrawn states undesirable and unhealthy, even contributing to inefficiency, while others may consider them indispensable to continued efficiency. The answer to the question thus involved must depend upon the personal history and situation of the individual under consideration.

Why the habit of smoking should ever be established has been discussed seriously and at length. It is constantly pointed out that the first experience of smoking is disagreeable. Presumably the disagreeableness should prevent the repetition of the act. But it obviously does not. The sociability motive has been presented: that people force themselves to learn to smoke and to enjoy it in order to be sociable with those who have the habit established. This might be called imitation, and

it has often been asserted that imitation is the cause of smoking on the part of the young people especially. But this leaves imitation unexplained. Why should they imitate? The desire for the pleasure which others are seen to enjoy might explain. It is true that the pleasures of life are sought, and some think that they are rare enough to justify a bit of discomfort in order to be achieved. The psychoanalysts have attacked the problem in a characteristic fashion. Brill thinks that smoking originated in a desire for strength and power, the superiority evidenced by the ability to suck and blow fire.¹ Youth, he thinks, takes to smoking as a means of appearing big, grown-up. It is the will to power motive. The adult on the other hand smokes as a regression, a retreat. The normal adult smokes moderately. Excessive smoking is allied to abnormality, and is to be explained through a study of the individual psychoneurotic condition. The sociability or brotherhood motivation Green has suggested is allied to the father-death wish motive.² Smoking is an expression of rebellion against the father's dictation, all men are supposed to have this wish, and in smoking together all find mutual satisfaction. This suggests the general trend of the psychoanalytic theorizing on the subject.

Caffein. This is the significant ingredient of tea, coffee, and certain soda fountain drinks. The prevalent use of this drug in these popular beverages makes the question of its effect quite important. Fortunately there have been a number of studies for the determination of its effects, psychological and physiological; but unfortunately these studies do not all point to the same conclusion.

There are studies which appear to demonstrate clearly that caffeine has a stimulating effect upon mental functions. Fatigue is reported to be offset by caffeine, scores on certain mental tests are improved, mental work is better, the subject is more

¹ Brill, A. A., "Tobacco and the individual," *Int. J. Psychoanal.*, 1922, 3, 430-444.

² Green, G. H., "Some notes on smoking," *Int. J. Psychoanal.*, 1923, 4, 323-325.

wakeful, sleep manifests greater motility, reflex time is shortened. Other studies indicate quite as clearly that caffeine is a depressant drug. Inhibitions appear to be weakened and conditioned reactions fade more slowly. Inability to concentrate is reported along with headache, dizziness, lengthened reaction time, and loss of accuracy in mental work done. Physical growth is retarded, and animals are made decidedly inactive in comparison with controls.¹

For such conflicting results as these some explanation must be found. It may be, as Hollingworth's work seemed to indicate, that small doses produce the stimulating effect and larger doses the depressant effect. That there are large individual differences in response to caffeine is generally recognized and admitted. Perhaps these conflicting results may somehow be related to individual differences; and it may be that other and largely unrecognized factors are operating as sources of error in these studies. For practical purposes it must be remembered that while caffeine may remove the feeling of fatigue it cannot restore the lost functional capacity. The use of it as a whip

¹ Chase, R. E., "The effect of nicotine and caffeine on the growth of chickens," *Amer. J. Physiol.*, 1928, 85, 527-530. Cooperman, N. R., "The effect of caffeine on body temperature and motility during sleep," *Amer. J. Physiol.*, 1933, 105, 24. Hawk, P. B., "A study of the physiological and psychological reactions of the human organism to coffee drinking," *Amer. J. Physiol.*, 1929, 90, 380-381. Heigl, P., "Untersuchungen über das Lesen und die Zahlenauffassung sowie deren Beeinflussung durch Tee," *Arch. f. d. ges. Psychol.*, 1928, 64, 257-300. Hollingworth, H. L., "The influence of caffeine on mental and motor efficiency," *Arch. of Psychol.*, 1912, No. 22. Pp. 166; "The influence of caffeine alkaloid on the quality and amount of sleep," *Amer. J. Psychol.*, 1912, 23, 89-100. Lashley, K. S., "The effects of strychnine and caffeine upon the rate of learning," *Psychobiol.*, 1917, 1, 141-169. Macht, D. I., Bloom, W. and Ting, G. C., "Comparative study of ethanol, caffeine and nicotine on the behavior of rats in a maze," *Amer. J. Physiol.*, 1921, 56, 264-272. Pauli, R., "Der Einfluss von Tee auf geistige Arbeit," *Arch. f. d. ges. Psychol.*, 1927, 60, 391-416. Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Page 187 et seq. Schilling, W., "Effects of caffeine and acetanilid," *Psychol. Rev.*, 1921, 28, 72-79. Switzer, S. A., "The effect of caffeine on experimental extinction of conditioned reactions," *J. Gen. Psychol.*, 1935, 12, 78-94. Winsor, A. L. and Strongin, E. I., "A study of the development of tolerance for caffeinated beverages," *J. Exper. Psychol.*, 1933, 16, 725-734.

when tired must then be with the full recognition that the ultimate effect is that of greater exhaustion. Care must also be taken against the use of coffee for stimulating purposes in critical situations (examination time, for example) because it may have an undesired depressant effect.

Contrasting it with alcohol, McDougall has presented caffeine as a stimulating and an introverting drug (along with morphine and strychnine). He says that caffeine will increase the rate of alteration in the observation of variable illusions,¹ and, as he uses this for a measure of the degree of introversion, his conclusion that caffeine is introverting is inevitable. But unfortunately so many of the studies of caffeine effects have not demonstrated it to be a stimulant, rather have they in a number of instances indicated results quite comparable to those of alcohol. The matter deserves, however, yet further investigation.

Sleep disturbances from coffee drinking have long been commonly observed. Studies of the profoundness of sleep by measures of motility have in recent years indicated a disturbing effect from caffeine ingestion. Hollingworth's researches revealed some more specific details, however. Small doses do not impair sleep (less than six grains or less than a couple of cups of coffee), but the influence depends upon certain important conditions. The greatest sleep disturbance was found when the dose was taken late in the afternoon and on an empty stomach. When the caffeine was taken with food the sleep disturbing effect was very much reduced. Apparently people of considerable body weight are less influenced by caffeine. The effect seems in a way proportional to physical efficiency.

Attempts to demonstrate the deleterious effect upon the school work of children have not been very satisfactory. Taylor² showed a slightly lower average for the coffee drinkers, but the difference was small. Terman's study of gifted children

¹ McDougall, Wm., *Outline of Abnormal Psychology*, page 445.

² Taylor, C. K., "Effect of coffee drinking upon children," *Psychol. Clinic*, 1912, 6, 56-58.

indicates that they drink very little tea or coffee, only a small per cent is reported as using it at all and in no case more than one cup a day.

The habitual use of caffeine and the unrestrained use of it, whatever be the general physical condition, may lead to serious physical consequences. But psychologically there is little to be said. Most students have observed coffee drinkers who became dependent upon whatever stimulating or quieting effect the drug affords. Often this is merely the habit of leaning on a drug instead of upon the use of proper food, and again it may be of the nature of a fixed idea. Some people seem clearly to have the obsession that they cannot get along without their tea or coffee, and their behavior appears quite like that of the obsessions and phobias familiar to the student of psychasthenic phenomena.

The problem of why caffeine containing drinks are used is probably simpler than in the case of the more powerful drugs. Here the taste of the drinks containing it is often pleasant from the first experience. The need of a stimulant, actual or imaginary, may also be influential. Certainly sociability is a large factor in its use. The depressant effect in the quantities ordinarily used is so small as to be insignificant. As in the case of tobacco the taste and the aroma may become parts of the general stimulus pattern conditioning certain agreeable modes of response. Perhaps this factors in the social significance of its use. It is worthy of observation that the state of mind ordinarily conditioned by its use is quite different from that conditioned by smoking.

Morphin and Cocaine. While the mental aspects of the use of these drugs are far from a complete demonstration of their effects, nevertheless the mental aspects are sufficiently significant to make wise some consideration of them by the student of psychology. The outstanding effect of morphin is the euphoria which it produces. Troubles and discomfort disappear. Pain, if there has been any, disappears. The mind settles into

a state of reverie in which ideas come with seeming ease and the ideas which are constructed are overevaluated. Thomas De Quincey in his *Confessions of an English Opium Eater* has given in rather extravagant style a description of the effects of opium (from which morphin is obtained) which is often quoted. Cocaine seems to have an effect quite similar to that of morphin. Its users describe the effect as that of an exquisite calm quite undisturbed by care or worry. There is also a feeling of increased mental and physical vigor. Natives of South America are said to make use of this on long marches as a means of offsetting fatigue. Whether this alleged effect of increasing the muscular output of work be due to an actual stimulation of the muscles or to the illusion of increased capacity by the cancellation of fatigue sensations has not been clearly established.

The subsequent effects of the habitual use of these drugs vary considerably with individuals. Often there comes a period when the subject of the habit develops a remorse as a consequence of recognizing the fact of habit domination. This may result in efforts to stop. The outstanding feature of the continued use of these drugs is, however, to be observed in the loss of self-control. Commonly this is described as degeneration of will. More strictly speaking it means that the desire for the state of mind produced by the drug dominates consciousness and inhibits impulses to the contrary. As this condition becomes established there must inevitably be an accompanying change in the self-concept, in ideals and the evaluations of life. This is the inevitable conclusion from the behavior of the drug habitué. Such persons seem to lose their moral principles. The effects of social pressure disappear. They will resort to any deceit and irregularity of conduct in order to obtain their drug. There is apparently also some disturbance which prevents continued attention. Life becomes centered upon obtaining the drug and the comfort which it produces. As the deterioration continues the contrast between the drugged condition and that when the effect of the drug has disappeared becomes more and

more striking to the subject of the habit, thus making the desirability for relief even greater. If there is for any reason even a temporarily enforced abstinence, life becomes insufferable because of the hallucinations, restlessness, and even persecutory delusions which ensue.¹

For the genesis of the drug habit it is necessary to look much further than to the drug itself. In a considerable number of cases the habit is acquired early, that is in the latter part of adolescence. Habitues and peddlers of the drug tempt young people into it. Why it should be tempting must be explained in terms of the flair of youth for the greatest possible range of experience. Perhaps in some instances the first experiments with it may represent a rebellion against authority, and again it may be due to the desire to be like certain older associates whose ways are looked upon as the proper ways of the world. While the psychology of aberrant adolescent spirit may explain some cases it is far from explaining all. Careful studies have revealed that in a very large percentage of cases the drug habit is superimposed upon a psychopathic basis. Family histories reveal a background of psychoses, epilepsy, alcoholism, feeble-mindedness, and psychoneurotic conditions. The personal histories often reveal psychoneurotic symptoms or other evidence of instability. Criminal records are not uncommon. This means that the capacity for control is weak to begin with. Then when life becomes uncomfortable and difficult the impulse to retreat from it into the artificial comfort of the drug easily dominates. Often the immediate cause for the drug use is worry, depression, insomnia, or pain. The flight from reality is thus evident.²

This psychotic or psychoneurotic basis also makes for a com-

¹ Fishman, J. F. and Perlman, V. T., "The real narcotic addict," *Amer. Mercury*, 1932, 25, 100-107.

² Kolk, L., "Drug addiction: a study of some medical cases," *Arch. Neur. & Psychiat.*, 1928, 20, 171-183. Treadway, W. L., "Drug addiction and measures for its prevention in the United States," *J. Amer. Med. Asso.*, 1932, 99, 372-379.

plication in the consequences of the drug usage. Not infrequently the use of the drug results in hastening the onset of a psychosis, or the drug effects become complicated in the whole psychoneurosis. In such instances the drug serves as an irritant or incidental feature. The statements that such drug addiction is the consequence of having used the drug to stop insomnia are undoubtedly often true. But the genesis of the habit should be made to include an explanation of the insomnia. Physicians are frequently blamed for people becoming drug addicts. Doubtless there is some truth in this because there are to be found in the profession of medicine as well as in other professions those who are poorly trained, those who are morally undesirable, and those who are occasionally careless. As has been pointed out in previous chapters the functionally based symptoms of the psychoneurotic may even for a long time mislead a competent physician. Consequently it is possible for the best intentioned of men to be led into the prescription of drugs which they might have avoided had the real condition of the patient been entirely clear.

Mescal. This drug has frequently attracted the attention of psychologists because of the peculiar alterations of mental processes which its ingestion effects. Some who have experimented with the poison report that they experienced a marked enhancement of their own personality, that they had a keen consciousness of unusual energy and intellectual power. Another (Fernberger), however, reported feelings of inferiority. This but indicates what has so often been observed—that the effect of any drug is not entirely attributable to the drug alone but depends upon the particular organization into which it is introduced. The outstanding features of mescal intoxication are the hallucinations, especially the visual, which are said to be gorgeous. Fernberger has given us an introspective description which is especially valuable because it was done by a psychologist highly trained in the technique of introspection. He noted a greater clearness of ~~the~~ sensations but especially of the

kinesthetic. This gave to space perception a marked distortion. In walking the sensations from the muscles and joints stood out clearly in succession and hence the process seemed ponderous. There was a similar distortion of visual space perception. In a later study Fernberger reports the effects upon nine adult subjects. Here it was found possible to exercise a certain degree of voluntary control over the hallucinations. There was marked exhilaration, lowered inhibitions, and a reduced susceptibility to fatigue.¹ Others have reported changes in temporal perception as well as spatial. Curiously enough the marked visual phenomena do not appear in all subjects. It may be well to add that experimentation with this drug is frequently rendered most unpleasant because of the great nausea produced.²

Anesthetic drugs. The course of the loss of consciousness by anesthetic drugs has been subjected to some rather careful studies. One experimental psychologist (Jones) had himself slowly anesthetized by chloroform under conditions which permitted most careful observation of the changes taking place. Other studies substantiate his work on the whole and so the course has been fairly well made out. There is very early a disturbance of kinesthetic sensations. This so affects the perception of movement as to make all movements seem longer and slower. Audition becomes confused by a roaring which increases until all else is drowned. The tactile sense is the next to go. Before it entirely disappeared Jones³ found an interesting illusion of distance, that, when different portions of the body were touched, the places touched seemed very far away. With the passing of touch sensations, the body was then perceived as floating. Muscular control disappeared soon after

¹ Fernberger, S. W., "Observations on taking peyote (*Anhalonium Lewinii*)," *Amer. J. Psychol.*, 1923, 34, 267-270; "Further observations on peyote intoxication," *J. Abn. & Soc. Psychol.*, 1932, 26, 367-378.

² Kelly, E. L., "Individual differences in the effects of mescal," *J. Gen. Psychol.*, 1933, 9, 462-472.

³ Jones, E. E., "The waning of consciousness under chloroform," *Psychol. Rev.*, 1909, 16, 48-54.

the tactile sense; the last movements to be lost were the highly specialized ones of the fingers, speech and eye movements. Vision was the last sense to go, and there the colors went before the grays.

The studies all agree that after sensory responses have been lost there still remain the conscious processes of imagination and thought. Jones had far the best opportunity for the observation of this because his waning of consciousness was deliberately made as slow as possible. He reported that after sensory responses were lost memory still seemed to be intact and accurate and reasoning ability about normal. He could call up imagery of friends and of music, although the attempt to produce imagery of movement failed. In this condition he proved a geometrical theorem.

Some of the reports indicate a struggle against the loss of consciousness, while others do not. This must be due to the attitude of the subject undergoing the anesthetization. The last experiences are of consciousness becoming narrower. One writer describes consciousness as narrowing down and becoming funnel shaped, with a light at the end surrounded by blackness. Then ideas disintegrate, all associations seem broken, and the last ideas experienced are often of childhood. Jones reports a curiously spatial placement of the last ideas. They were experienced as located and far apart. It seems probable that the course may vary somewhat with the particular drug used although these finer details have not been established.

SELECTED REFERENCES

Alcohol

- Dodge, R. and Benedict, F. G., *Psychological Effects of Alcohol*. Washington, Carnegie Inst., 1915. Pp. 281.
 Emerson, H. (Ed.), *Alcohol and Man*. New York, Macmillan, 1932. Pp. 451.
 Ewen, J. H., "The psychological estimation of the effects of certain

- drugs upon the syntonetic and schizophrenic psychoses," *J. Ment. Sci.*, 1931, 77, 742-766.
- Hollingsworth, H. L., "The influence of alcohol," *J. Abn. & Soc. Psychol.*, 1924, 18, 204-237, 311-333.
- Karlson, K. J., "Mental processes as affected by alcohol," *Ped. Sem.*, 1913, 20, 322-342.
- Miles, W. R., *Alcohol and Human Efficiency*. Washington, Carnegie Inst., 1924. Pp. 298.
- Moll, J. M., "The 'amnesic' or Korsakow's syndrome, with alcoholic etiology: an analysis of thirty cases," *J. Ment. Sci.*, 1915, 61, 424-443.
- Peabody, R. R., "Psychotherapeutic procedure in the treatment of chronic alcoholism," *Ment. Hyg.*, 1930, 14, 109-128.
- Rivers, W. H. R., *The Influence of Alcohol and Other Drugs on Fatigue*. London, Arnold, 1908. Pp. 136.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Part II, chap. X.
- Sullivan, W. C., "Alcoholism and suicidal impulses," *J. Ment. Sci.*, 1898, 44, 259-270.

Tobacco

- Bates, R. L., "The effects of cigar and cigarette smoking on certain psychological and physiological functions," *J. Comp. Psychol.*, 1922, 2, 371-424, 431-505; 1923, 3, 37-49.
- Brill, A. A., "Tobacco and the individual," *Int. J. Psychoanal.*, 1922, 3, 430-444.
- Burnham, W. H., "The effect of tobacco on mental efficiency," *Ped. Sem.*, 1917, 24, 297-317.
- Earp, J. R., *The Student Who Smokes* (2nd ed.). Yellow Springs, Antioch Press, 1926. Pp. 61.
- Fisher, G. J. and Berry, Elmer, *Physical Effects of Smoking*. New York, Asso. Press, 1917. Pp. 188.
- Hull, C. L., "The influence of tobacco smoking on mental efficiency," *Psychol. Monog.*, 1924, 33, No. 3, 1-160.
- Macht, D. I., Bloom, W. and Ting, G. C., "Comparative study of ethanol, caffeine and nicotine on the behavior of rats in a maze," *Amer. J. Physiol.*, 1921, 56, 264-272.
- O'Shea, M. V., *Tobacco and Mental Efficiency*. New York, Macmillan, 1923. Pp. 258.
- Ruckmick, C. A., "Experience during learning to smoke," *Amer. J. Psychol.*, 1924, 35, 402-406.

Caffein

- Hawk, P. B., "A study of the physiological and psychological reactions of the human organism to coffee drinking," *Amer. J. Physiol.*, 1929, 90, 380-381.
- Hollingsworth, H. L., "The influences of caffein on mental and motor efficiency," *Arch. of Psychol.*, 1912, No. 22. Pp. 166.
- Hollingsworth, H. L., "The influence of caffein alkaloid on the quality and amount of sleep," *Amer. J. Psychol.*, 1912, 23, 89-100.
- Lashley, K. S., "The effects of strychnine and caffein upon the rate of learning," *Psychobiol.*, 1917, 1, 141-169.
- Renshaw, S., Miller, V. L. and Marquis, D. P., *Children's Sleep*. New York, Macmillan, 1933. Page 187 *et seq.*
- Rivers, W. H. R., *The Influence of Alcohol and Other Drugs on Fatigue*. London, Arnold, 1908. Pp. 136.
- Schilling, Walter, "Effect of caffein and acetanolid," *Psychol. Rev.*, 1921, 28, 72-79.
- Switzer, S. A., "The effect of caffeine on experimental extinction of conditioned reactions," *J. Gen. Psychol.*, 1935, 12, 78-94.
- Winsor, A. L. and Strongin, E. I., "A study of the development of tolerance for caffeinated beverages," *J. Exper. Psychol.*, 1933, 16, 725-734.

Morphin and Cocaine

- Armstrong-Jones, R., "Drug addiction in relation to mental disorders," *J. Ment. Sci.*, 1915, 61, 37-64.
- Kolk, L., "Drug addiction: a study of some medical cases," *Arch. Neur. & Psychiat.*, 1928, 20, 171-183.
- Miner, J. B., "The psycho-medical correction of the drug habit," *J. Abn. & Soc. Psychol.*, 1933, 28, 119-122.
- Noyes, A. P., *Modern Clinical Psychiatry*. Phila., Saunders, 1934. Chap. XXIII.
- Owens, W. D., "Signs and symptoms presented by those addicted to cocain," *Jour. Amer. Med. Asso.*, 1912, 58, 329-331.
- Rosanoff, A. J., *Manual of Psychiatry* (6th ed.). New York, Wiley, 1927. Part II, chap. XI.
- Treadway, W. L., "Drug addiction and measures for its prevention in the United States," *Jour. Amer. Med. Asso.*, 1932, 99, 372-379.

Mescal

- Buchanan, D. N., "Meskalinrausch," *Brit. J. Med. Psychol.*, 1929, 9, 67-88. (Bibliog. of 89 titles.)

- Ellis, Havelock, "Mescal: a new artificial paradise," *Contemp. Rev.*, 1898, 73, 130-141.
- Ellis, Havelock, "Mescal: a study of a divine plant," *Pop. Sci. Mo.*, 1902, 61, 52-71.
- Fernberger, S. W., "Observations on taking peyote (*Anhalonium Lewinii*)," *Amer. J. Psychol.*, 1923, 34, 267-270.
- Fernberger, S. W., "Further observations on peyote intoxication," *J. Abn. & Soc. Psychol.*, 1932, 26, 367-378.
- Kelly, E. L., "Individual differences in the effects of mescal," *J. Gen. Psychol.*, 1933, 9, 462-472.
- Klüver, H., *Mescal: the Divine Plant and its Psychological Effects*. London, Kegan Paul, 1928. Pp. 110.
- Mitchell, S. W., "The effects of mescal button," *Brit. Med. Jour.*, 1896, Dec. 5th.

Anesthetics

- B. I., "Experiences under the influence of ether," *Psychol. Rev.*, 1899, 6, 104-106.
- Hill, D. S., "Loss and recovery of consciousness under anesthesia," *Psychol. Bull.*, 1910, 7, 77-83.
- Ioteyko, J. and Stefanowska, "Analyse des mouvements et de la sensibilité dans l'anesthésie par l'éther," *J. de Neurol.*, 1902, 7, 101-104.
- Jacobson, E., "Consciousness under anesthetics," *Amer. J. Psychol.*, 1911, 22, 333-345.
- Johnson, C. H., "The rôle of sensations and feelings under ether," *J. Abn. Psychol.*, 1909, 4, 17-31.
- Jones, E. E., "The waning of consciousness under chloroform," *Psychol. Rev.*, 1909, 16, 48-54.

CHAPTER XX

SPIRITISTIC PHENOMENA

FRAUDULENT MEDIUMS, PHYSICAL PHENOMENA WITHOUT TRANCE STATES (MUSCLE READING, TABLE-TIPPING, OUIJA BOARD, PLANCHETTE, AUTOMATIC WRITING), PHYSICAL PHENOMENA WITH TRANCE STATES, TELEPATHY AND ALLIED PHENOMENA (CRYSTAL GAZING, GHOSTS AND APPARITIONS, DOWSING), SOURCES OF ERROR, TRANCE STATES, MEDIUMISTIC "COMMUNICATIONS."

In the literature of spiritism there is a valuable mass of material for practice in the interpretation of abnormal and borderline phenomena. It should be treated as clinical material. This attitude need not exclude a possible religious significance in the material studied; but the religious consideration should be postponed until after the phenomena of spiritism have been examined exactly as any other form of unusual behavior is examined. This scientific attitude must be kept clearly in mind. It means that the student of psychology will approach the literature, not as one trying to determine on scientific grounds if there be or be not demonstrations of communication with the spirit world, but as one who is facing unusual if not abnormal forms of human behavior for the explanation of which he must bring to bear all of his psychological training. The validity of the spiritistic claim is not a part of the psychologist's problem. The problem for the psychologist is the explanation of human behavior when stimulated by spiritistic situations. For such a purpose it will be convenient to group the phenomena in the following manner: Fraudulent procedures and their effects, physical phenomena of spiritism with and without trance states, telepathic and telesthetic phenom-

ena, trance states. The following discussion follows these general headings.

Fraudulent Mediums. The phenomena which these produce bring to the fore some striking examples of perceptive illusion quite like those to be found in the work of contemporary prestidigitators. When the methods by which the illusions are produced are revealed and recognized, they usually appear so simple as to be unconvincing. One eminent psychologist tells of first producing some messages on sealed slates and then revealing his method of so doing, upon which his sitter refused to believe, even when shown, that he could have been deceived by a method so simple and insisted that the effect had really been produced by supernormal means. The very simplicity of the technique of producing the illusion thus often adds to the complexity of the effect. Space does not permit any complete presentation of fraudulent procedures were the material entirely available for such an exhaustive presentation, but it is doubtless wise to consider a few.

A common practice in spiritistic gatherings is to send attendants through the audience asking those who so desire to write questions addressed to friends in the spirit world. These questions are sometimes written upon correspondence cards and then sealed by the writers in the accompanying envelopes. Sometimes the questions are written upon slips of paper torn from a pad and then the slip is folded tightly several times; usually it is marked by some recognizable number or letter on the outside. Then these questions are placed before the medium on a table. The medium, whether or not pretending a trance, picks up the questions one by one and without opening them speaks to the audience the answer to each, presenting the answer as though it came from the spirit world. The technique necessary for this, in addition to a facile imagination, is merely that which will bring to the perception of the medium the content of a sufficient number of the questions. Several ways have been used for achieving this. One is to

fasten in the palm of the medium a wet sponge with which the envelope may be moistened and the writing within made visible. It is also readily possible for the attendants who collect the questions to substitute for the original bundle a false bundle produced from beneath their long coats or flowing robes. After this has been done the attendant retires to an anteroom and communicates the questions by telephone to the medium, who has a receiving set concealed in her hair with wires running to plates in her shoes which may be connected when necessary with corresponding plates in the floor of the stage. Where the fraud is perpetrated in a theater, the original questions are, after such substitution, opened in the wings and the contents copied in large hand on a conveniently placed blackboard readily visible to the medium but not to the audience. Where the questions are presented upon folded slips of paper, the procedure is even simpler. The medium picks up one, looks at it, and remarks that unfortunately some one has omitted to mark it on the outside, and lays it down, with apparent regret, behind some conveniently placed flowers. As it is laid down it is deftly opened and read. Then the medium picks up another, holds it conspicuously before the audience and calls the number of the one just placed behind the flowers, and proceeds to answer the preceding question. The audience is thus misled into thinking that she is calling the number and answering the question held in her hand. This trick of working one behind is both old and effective.

The number of raps, and voices from horns, and misplaced household objects which have been attributed to spirits by those who make but a casual investigation is quite remarkable. Such are often effected through the alleged powers of a medium and under conditions supposed to make impossible any form of trickery by the medium. As a matter of fact the conditions provided serve rather to make trickery possible, and add to the illusory effect produced. In such instances the alleged medium sits at a table with several "sitters," as they are called. The

hands of the medium are conspicuously held by the hands of the adjoining sitters on both sides by the overlapping of fingers, that is, the fingers of the sitter on each side lie over the nearest finger of the medium. The feet are also held, either by the toes of the sitters resting on the toes of the shoes of the medium or the reverse. The lights are then turned low or out for reasons given in terms of the spirit world, but obviously for the actual reason of facilitating the production of the illusion. Then by a little jarring of the table it is possible to slip one hand free and immediately ask that the sitter regain the hold, but what actually happens is that the adjoining sitters now both hold fingers of one hand of the medium, leaving the other free for trickery. Where tricks are produced by the use of the feet, the medium either withdraws the foot from the shoe, leaving the shoe securely held by the sitter, or, where the medium's feet are on top, it is possible by turning the foot to hold the foot of one sitter with the toe and the foot of the other with the heel of the same foot. This leaves the other foot free for the production of the desired effects. A return to the original position is achieved by a similar trick before the lights are turned on again. Simple as this seems it has nevertheless been used many times to the befuddlement of sitters. With one hand or one foot free, or both, a medium is in position to cause sufficient disturbance to satisfy the most expectant sitter.

Messages from the spirit world written on slates are another popular form of deception. These can be most easily produced by using a slate made with one side double; the double or cover sheet is made of cardboard and finished to look like slate. It is so securely held by concealed springs at each end that it is quite possible to hand it out for examination without fear of detection. The message to be obtained is written prior to the sitting and securely covered by the flap. Then at the proper time the flap is released and concealed in papers or under a table cover, while the sitter is engaged in wonderment over the message revealed. Methods for the substitution of slates and

the actual writing of the message by a confederate working through a trap door in the floor under the table have all been utilized and quite elaborately developed.

So-called materializations of spirit friends by such fraudulent mediums are achieved with equal simplicity. A high degree of expectancy is built up in the sitter. Then in the darkness a figure marked with some dull illuminant such as phosphorus is projected mechanically, or with the aid of a confederate, into the range of vision of the sitter. It is a matter of record that such dummies have been recognized many times by many different persons as the materialized presence of dead relatives and friends. Such preperceptive illusions are supplemented by the emotion aroused, and the memory is further distorted by frequent repetition of the story, always to the advantage of the reputation of the spiritistic séance.

In the analysis of all such fraudulent phenomena, it must be kept in mind that the mere production of the illusion is not the whole of the story. The very production of the illusion is made easier by an almost universal will to believe. The possession of a college education even does not remove entirely the notion that perhaps there "may be something in it," and the vast majority of people have much less training in critical and interpretative thought. The notion that communication with another world is either possible or worthy of consideration seems to be as old as mankind itself, certainly it is far older than the knowledge of illusions and of the psychology of trance states. This disposition to believe is an invaluable aid to any who would deceive in this manner. The companion tendency to generalize from a few positive cases and to neglect the negative cases is an ever present aid also to the spiritistic fraud. If the medium makes one hit among a number of misses, that one hit will be remembered and dilated upon while the misses will be forgotten. In the examination of alleged mediumistic phenomena this fallacy of procedure is an ever present danger even to the trained observer. Frequently reports are collected

of what are termed significant communications and materializations and the rest of the phenomena discarded as of no importance. Well developed human nature is still likely to commit this fallacy, hence the interpretative student must be all the more on his guard.

Most sitters to mediums come to the sitting because of some emotionally disturbing experience. They have lost a relative, a very dear friend, a lover, or they are in business distress and seek the advice of some departed soul who, strange as it may seem, is supposed to have more knowledge of this world because he is now in another, or they are disturbed over religious problems and hope by receiving demonstrations of the existence of another world to bolster up a declining faith. Whatever be the individual distress, it is of minor importance to the interpretation. The important feature is that they are emotionally distraught and are therefore not in a critical state of mind nor are they capable of normal observation. The unreliability of the observations of the trained mind is well known to all who have studied the testimony experiments in general psychology; and, consequently, in experimental work it is customary to check observation by repetition under controlled conditions. But in the spiritistic sittings the possibility of controlled repetition is reduced to a minimum, if not eliminated entirely, and one is left only the unchecked observations of emotionally disturbed observers.

The claim so often heard that the sitter carefully refrained from telling the medium anything is of little significance, except as it contributes to the belief of the sitter. The number of people in any community who habitually or even occasionally visit the mediums is probably not very large. It would be a simple matter for one itinerant medium to accumulate before leaving town a considerable body of information concerning the people who called for sittings and pass this on to the next medium about to work that town. A few itinerants thus going into a town would soon accumulate a very workable body of

material with which to astonish sitters. It is also quite possible to read in the daily papers the reports of deaths and all the attending circumstances and of relatives, and thus be fairly well prepared for sitters who may come. An old trick is to give the sitter a poor but tantalizing experience the first time, just sufficient to make the sitter want to come again. Before the sitting is repeated the medium has ample time to gather useful information.

Physical Phenomena without Trance States. After eliminating the clearly or patently fraudulent there is yet a vast body of phenomena constantly worked over and worked with by spiritistic believers and near-believers which deserves more careful examination. It will be well to examine first the physical phenomena of spiritism which occur without the development of trance states. Of these there are many forms. While they are not always presented as of spiritistic nature or used as evidence for spiritism they are nevertheless used as aids to occult thinking and the belief in the supernatural. *Thought reading* or *muscle reading* stunts when well done are easily obfuscating. There is that old parlor trick of sending a guest into outer darkness and then in his absence agreeing upon something which the guest is to do upon his return, the knowledge of which act is to be communicated to him through some supposedly supernatural means. The actual means is very simple. The guest when brought back into the parlor is securely blindfolded. Then three or four others stand behind resting their fingers lightly upon the shoulders or back of the subject. These guiding spirits are instructed to "concentrate" constantly upon what the guest is desired to do. To the amazement of all, the subject slowly and clumsily does what had been agreed upon although it was unknown to the subject. Of course this trick is most likely to succeed if the act to be done is a simple physical one, as it usually is. A companion stunt is the opening of a safe by a person who does not know the combination of the lock by holding the hand of a person who does know.

of what are termed significant communications and materializations and the rest of the phenomena discarded as of no importance. Well developed human nature is still likely to commit this fallacy, hence the interpretative student must be all the more on his guard.

Most sitters to mediums come to the sitting because of some emotionally disturbing experience. They have lost a relative, a very dear friend, a lover, or they are in business distress and seek the advice of some departed soul who, strange as it may seem, is supposed to have more knowledge of this world because he is now in another, or they are disturbed over religious problems and hope by receiving demonstrations of the existence of another world to bolster up a declining faith. Whatever be the individual distress, it is of minor importance to the interpretation. The important feature is that they are emotionally distraught and are therefore not in a critical state of mind nor are they capable of normal observation. The unreliability of the observations of the trained mind is well known to all who have studied the testimony experiments in general psychology; and, consequently, in experimental work it is customary to check observation by repetition under controlled conditions. But in the spiritistic sittings the possibility of controlled repetition is reduced to a minimum, if not eliminated entirely, and one is left only the unchecked observations of emotionally disturbed observers.

The claim so often heard that the sitter carefully refrained from telling the medium anything is of little significance, except as it contributes to the belief of the sitter. The number of people in any community who habitually or even occasionally visit the mediums is probably not very large. It would be a simple matter for one itinerant medium to accumulate before leaving town a considerable body of information concerning the people who called for sittings and pass this on to the next medium about to work that town. A few itinerants thus going into a town would soon accumulate a very workable body of

material with which to astonish sitters. It is also quite possible to read in the daily papers the reports of deaths and all the attending circumstances and of relatives, and thus be fairly well prepared for sitters who may come. An old trick is to give the sitter a poor but tantalizing experience the first time, just sufficient to make the sitter want to come again. Before the sitting is repeated the medium has ample time to gather useful information.

Physical Phenomena without Trance States. After eliminating the clearly or patently fraudulent there is yet a vast body of phenomena constantly worked over and worked with by spiritistic believers and near-believers which deserves more careful examination. It will be well to examine first the physical phenomena of spiritism which occur without the development of trance states. Of these there are many forms. While they are not always presented as of spiritistic nature or used as evidence for spiritism they are nevertheless used as aids to occult thinking and the belief in the supernatural. *Thought reading* or *muscle reading* stunts when well done are easily obfuscating. There is that old parlor trick of sending a guest into outer darkness and then in his absence agreeing upon something which the guest is to do upon his return, the knowledge of which act is to be communicated to him through some supposedly supernatural means. The actual means is very simple. The guest when brought back into the parlor is securely blindfolded. Then three or four others stand behind resting their fingers lightly upon the shoulders or back of the subject. These guiding spirits are instructed to "concentrate" constantly upon what the guest is desired to do. To the amazement of all, the subject slowly and clumsily does what had been agreed upon although it was unknown to the subject. Of course this trick is most likely to succeed if the act to be done is a simple physical one, as it usually is. A companion stunt is the opening of a safe by a person who does not know the combination of the lock by holding the hand of a person who does know.

The explanation of such truly impressive bits of behavior is to be found in the motor accompaniments of thought and attention. These slight movements in the direction of the object attended to have been repeatedly demonstrated in automato-graph experiments. In the parlor thought-reading stunt the explanation is to be found in the response of the ignorant guest to unconscious pushes made by the others through their fingers, while intently thinking about the far side of the room, a given chair, etc. It is quite evident that some persons who do this stunt for parlor entertainment are quite ignorant of how it is done. And this of course promotes speculation in terms of the supernatural. It is also quite possible to do the stunt deliberately and knowingly. The subject can wait and watch for the unconsciously given signals and follow those with care. A quick-witted subject will of course supplement these signals by a little clever thinking and thus greatly aid in the bewilderment of the guests.

The safe-opening stunt is likewise due to the unconscious movement accompanying thought and attention. The skillful operator will slowly turn the dials, with his attention apparently upon the dial figures, but actually upon the hand of the person who knows the combination. By proper preliminaries the one who knows is wrought to a high pitch of expectancy to see if the operator can really perform the stunt. In other words, he will be watching closely to see if the operator will stop the dial at the proper point and start the turn the other way. Consequently, when the dial reaches the proper point, he will unconsciously move the muscles of his hand ever so slightly, but sufficiently to give the watchful operator the signal which is promptly acted upon. These possibilities of response to unconscious signals were long ago brilliantly demonstrated in the study of the remarkable horse *Clever Hans*, and later subjected to careful study by Professor Stratton.¹ The up-

¹ Pfungst, O., *Clever Hans*. New York, Holt, 1911. Pp. 274. Stratton, G. M., "The control of another person by obscure signs," *Psychol. Rev.*, 1921, 28, 301-314.

shot of these studies is a body of valuable evidence for the existence of these signs, already known to laboratory experimenters, in two very different fields of study; but both contribute to our knowledge of the possibilities in control of behavior by such unconsciously given signals. Doubtless many so-called supernatural communications of thought or influence are to be interpreted in such terms as these; at least these facts should be fresh in the mind of anyone about to investigate some reported case of remarkable powers.

Table-tipping séances have their regularly recurrent periods of popularity. The stunt is usually produced by a person who speaks of it as though it were the production or induction of spirit control of the table. The best results can be obtained with a light but firmly constructed table having a rectangular top about eighteen by thirty inches. Two or three people in addition to the operator place their hands on the top of the table and rest them there lightly. The operator tells them in a firm but quiet manner that they are to let their hands rest on the table without moving them and that under no circumstances are they to push the table. This instruction not to push is usually repeated for the sake of the subsequent effect. They are also told to be patient, very patient indeed, because it often takes some time before the table will begin to respond; but that in time the table will begin to move and when it does begin to move they are to do nothing but follow it, to let it go (sic) in any direction it may choose. The operator continues in a quiet voice to tell his associates that they are to look steadily at the table or to close their eyes if they prefer, but that they are to think of as nearly nothing as possible, concentrating entirely upon the table. When all are quiet and waiting expectantly the operator himself ceases to speak and sits also waiting expectantly and apparently concentrating upon the table. Under such circumstances it is obvious that in a fairly short time more than one hand will tremble in the same direction, at least enough so as to give to all the perception that the table is mov-

The explanation of such truly impressive bits of behavior is to be found in the motor accompaniments of thought and attention. These slight movements in the direction of the object attended to have been repeatedly demonstrated in automograph experiments. In the parlor thought-reading stunt the explanation is to be found in the response of the ignorant guest to unconscious pushes made by the others through their fingers, while intently thinking about the far side of the room, a given chair, etc. It is quite evident that some persons who do this stunt for parlor entertainment are quite ignorant of how it is done. And this of course promotes speculation in terms of the supernatural. It is also quite possible to do the stunt deliberately and knowingly. The subject can wait and watch for the unconsciously given signals and follow those with care. A quick-witted subject will of course supplement these signals by a little clever thinking and thus greatly aid in the bewilderment of the guests.

The safe-opening stunt is likewise due to the unconscious movement accompanying thought and attention. The skillful operator will slowly turn the dials, with his attention apparently upon the dial figures, but actually upon the hand of the person who knows the combination. By proper preliminaries the one who knows is wrought to a high pitch of expectancy to see if the operator can really perform the stunt. In other words, he will be watching closely to see if the operator will stop the dial at the proper point and start the turn the other way. Consequently, when the dial reaches the proper point, he will unconsciously move the muscles of his hand ever so slightly, but sufficiently to give the watchful operator the signal which is promptly acted upon. These possibilities of response to unconscious signals were long ago brilliantly demonstrated in the study of the remarkable horse *Clever Hans*, and later subjected to careful study by Professor Stratton.¹ The up-

¹ Pfungst, O., *Clever Hans*. New York, Holt, 1911. Pp. 274. Stratton, G. M., "The control of another person by obscure signs," *Psychol. Rev.*, 1921, 28, 301-314.

shot of these studies is a body of valuable evidence for the existence of these signs, already known to laboratory experimenters, in two very different fields of study; but both contribute to our knowledge of the possibilities in control of behavior by such unconsciously given signals. Doubtless many so-called supernatural communications of thought or influence are to be interpreted in such terms as these; at least these facts should be fresh in the mind of anyone about to investigate some reported case of remarkable powers.

Table-tipping séances have their regularly recurrent periods of popularity. The stunt is usually produced by a person who speaks of it as though it were the production or induction of spirit control of the table. The best results can be obtained with a light but firmly constructed table having a rectangular top about eighteen by thirty inches. Two or three people in addition to the operator place their hands on the top of the table and rest them there lightly. The operator tells them in a firm but quiet manner that they are to let their hands rest on the table without moving them and that under no circumstances are they to push the table. This instruction not to push is usually repeated for the sake of the subsequent effect. They are also told to be patient, very patient indeed, because it often takes some time before the table will begin to respond; but that in time the table will begin to move and when it does begin to move they are to do nothing but follow it, to let it go (sic) in any direction it may choose. The operator continues in a quiet voice to tell his associates that they are to look steadily at the table or to close their eyes if they prefer, but that they are to think of as nearly nothing as possible, concentrating entirely upon the table. When all are quiet and waiting expectantly the operator himself ceases to speak and sits also waiting expectantly and apparently concentrating upon the table. Under such circumstances it is obvious that in a fairly short time more than one hand will tremble in the same direction, at least enough so as to give to all the perception that the table is mov-

ing in a certain direction. Then the attention of all is on that direction and the unconscious tendencies of all are to move in that same direction, with the result that the table moves or tips that way. The operator at once assumes command, speaking his commands firmly and expectantly to the table. He tells it to tip now one way and now another and even to walk along by swinging one way and the other when tipped up on two legs. When once started the commands ostensibly given to the table actually produce the effect of directing the attention of all who have their hands on the table and through their unconscious movements the movement of the table is controlled. An impressive additional feature is for the operator to remove his hands from the table entirely, demonstrating that he is wholly honest and that the table's movements cannot be attributed to duplicity on his part. Such a performance should be ended in some appropriate manner by the operator. The conclusion is usually followed by animated discussion. Those who had their hands on the table, especially if they have never participated before, accuse each other of having pushed; and of course each assures the other that he did not push. Eventually the conversation will wander off into discussions of other possible explanations.

The above description will remind most readers of the chapters on hypnotism and hysteria. The quiet positions of the people at the table, the firm voice of the operator building up an attitude of expectancy, the continued attention to one and the same object, with the inevitable retraction of the field of consciousness and the accompanying heightening of suggestibility, all remind one of the induction of hypnosis. In addition to the attitude of expectancy, however, it is important to observe that there is also established the do-not-push attitude. After the séance is over the do-not-push attitude is recalled and each thinks, believes in fact, that he did not push. Each is presumably unaware of the tendency to move with and toward the object of attention, which, when combined with simulta-

neous tendencies in the hands of several others, will move a very sizable table. If any further proof is necessary for this explanation it may be readily obtained by watching the fingernails of those whose hands are on the table. When the fingers are resting lightly on the table at the beginning of the séance the blood distribution under the fingernails is quite different from what it is when the fingers are pushing firmly in any direction. This difference may be observed by anyone who will rest his fingers lightly and compare the appearance when trying to push forward the surface upon which the fingers rest.

Sometimes the experiment is complicated, or elaborated a little, by asking the table to answer questions. Only such questions are asked as can be answered by yes or no, or by numbers, as the age of some sitter, for example. Yes and no answers are achieved by having the table tip once for yes and twice for no. The results of such a performance are quite instructive. The sitters and guests are still more inclined to the acceptance of supernormal interpretations. The tendency to emphasize the hits and neglect the misses will also be instructively evident. The tendency in such discussions is to be concerned wholly with the answers remarkable for their correctness, or approximate correctness. The willingness to neglect all others is surprising to the critical observer. It can be readily demonstrated that such table-tipped answers to questions are really controlled unconsciously by the sitters or even by one sitter. Here the phenomenon is again comparable to the studies of involuntary signaling. If a question is asked of the table and the answer is known to the sitters, the number tipped is achieved much as Clever Hans pawed the numerical answers to the questions propounded to him. But if the answer to the question asked is known to one only of the sitters, and that sitter thinks intently and constantly of a number other than the correct answer, he, as well as his colleagues, will be surprised to find that the table will tip off the number of which the sitter is thinking and not the true answer. Stories are cur-

rent in most communities of people who can in such séances actually lift the table straight up from the floor. Doubtless these are exaggerations of what was actually done. When sitters attempt later to tell of their experiences with the supposedly supernatural, testimony becomes more than ever unreliable. Dealers in apparatus for the use of magicians supply equipment by which a table may be lifted apparently by the mere placing of the hands on its top.

The *ouija board* has for long been a popular means of social flirting with the occult. It consists of a board upon which are printed in large letters the alphabet, the numerals, and the words yes and no. In addition there is a small movable platform, usually triangular or heart-shaped, upon which the fingers of one or two sitters are placed. Then after a little waiting and concentration the movable platform begins to glide about and in a successful sitting it spells out answers to questions asked, or answers by pointing to the appropriate numerals or the conveniently placed yes and no. Here the sitters whose hands are on the board read the answers with no knowledge of what the answer is to be. A few years ago much attention was attracted to the *ouija board* because of the remarkable results obtained by a Mrs. Curran whose *ouija board* was supposed to be operated by a spirit known as Patience Worth. This spirit-controlled (?) board produced long and involved communications and literary productions. Through it Patience Worth wrote whole novels and poems of considerable length, as well as much material in briefer form. She proved to be quite clever in conversation with her sitters.¹

The analysis of the *ouija board* phenomena involves a considerable step in advance of the simple phenomena of muscle reading and table tipping. The whole setting must be more carefully observed. When such care is taken it will be noted that there is a marked desire to have the board write, and

¹ Yost, C. S., *Patience Worth*. New York, Holt, 1916. Pp. 290. Cory, C. E., "Patience Worth," *Psychol. Rev.*, 1919, 26, 397-406.

there may even be other and more significant desires. Some have thought that the history of Mrs. Curran gave evidence of an unsatisfied desire for literary production, a desire which had been blocked by circumstances. A careful scrutiny of all the ouija board productions of a given operator, negative and meaningless material as well as positive and apparently meaningful material, will reveal nothing which could not have come out of the neuropsychic organization of the operator. In the Patience Worth case the language used is curious. It is said to be that of England of the 17th century with many inclusions of a still older style. From this the notion has grown up that Patience Worth, when on this earth, lived at about that time in England. It is also noteworthy that she occasionally used contemporary terms such as "shack." Nothing of any significance concerning the other world is revealed by her. The repartee for which she is famous is but the repartee possible to a clever woman. When asked why she used so slow and laborious a method as that of spelling all out on the ouija board, her answer was, "The hand o' her do I to put be the hand o' her, and 'tis ascribe that setteth the one awither by eyes-fulls she taketh in." Such an answer appears to be nothing but an attempt to mislead from what would be embarrassingly absurd. The result is logically not much better. The obvious conclusion from a reading of the Patience Worth literature is that there is nothing which could not have come out of the brain of Mrs. Curran, and that it is probably the expression of her desire to write. There is no need for denial of her claims to a lack of knowledge of what the hand produces. There are many reliable records of such unconscious production. Apparently it is a case of dissociated or isolated functioning of the writing mechanism in which frustrated desires find expression. Unfortunately a complete psychological study of the case is not available. The more common cases of ouija board operation are undoubtedly demonstrations of simple abstraction with partial dissociation of the writing mechanism. To what extent

such can be articulated with psychogenic theory is not yet clear, although it is probable that the productions by the ouija board could be used as the basis for psychogenic study in exactly the same manner as are dreams, obsessions, and hysterical symptoms.

The *planchette* is another means of producing messages from an obscure source. It is very like the movable table of the ouija board, although usually a little larger, and at the apex, in place of the castor, there is a vertical tube through which a pencil is fitted. The *planchette* is placed on a sheet of paper on a level table and then the fingers of the operator or operators are placed upon it. Movement appears, as before, after a little expectant waiting, but is here recorded by the pencil on the paper, and in successful sittings the movements are such as to produce legible script. It is usually more difficult to achieve satisfactory results with the *planchette* than with the preceding methods. As the explanation of its productions are of a piece with others it may be considered below.

Automatic writing is a term usually applied to instances of actual writing with pen or pencil but in which the person whose hand does the writing is not aware of what is taking place. There seem to be different degrees of this awareness. In some instances the subject is completely absorbed in reading or may be in a highly abstracted state akin to absent-mindedness and be quite unaware that the hand is writing. At the other extreme, there are cases where the hand writes while the owner looks on and reads with the interest of a non-participant all that the hand produces. Sometimes the subject is merely aware that the hand is writing but not aware of the nature of the production until the sheets are read at the conclusion and this without a trace of a *déjà vu* experience. During the war a woman who published under the name of Elsa Barker¹ produced by such automatic writing more than a volume of letters

¹ Barker, Elsa, *Letters of a Living Dead Man*. New York, Kennerley, 1914. Pp. 291.

purporting to have been written by spirits in the other world. The literary productions of such automatic writers have been repeatedly scanned for evidence in support of the doctrine of immortality. By far the larger part has been rejected as of little evidential value, and the very small residuum is contested by many as being most uncertain evidence. Certainly it may be safely stated that with a few very debatable exceptions all such automatically written productions are the product of the neuromuscular organization behind the hand which held the pencil.

Reflection upon these phenomena, especially those in which intelligible communications of some sort are produced, reveals many characteristics in common which are at the same time characteristics quite familiar to the student of abnormal psychology. It will usually be found that the personal histories of automatic writers and of successful operators of ouija boards and planchettes reveal other evidence of psychoneurotic conditions. All operate in a state of greater or less abstraction, the content of consciousness is abnormally limited in scope (what would normally be in consciousness is not), a neuromuscular function operates apart from consciousness, in a manner which is normally accompanied by consciousness, in some cases the writing hand is anesthetic in a manner that reminds one of hysterical anesthesia. While the content of the productions has not been carefully studied from this point of view, the fragmentary and apparently incoherent nature of much of it intimates the possibility of its being comparable to the content of dreams, psychasthenic phenomena and hysterical disturbances. The state of abstraction or retracted field of consciousness in which all of these phenomena take place is one of heightened suggestibility. The greater ease with which this state is produced in some individuals than in others may be indicative, and the suggestible condition may also help to explain the origin of some of the material produced.

Speaking in terms of Janet, the concept of a weakened syn-

thesis and tendencies to dissociation, it might be possible to say that the arrangement of items above (thought- or muscle-reading, table tipping, ouija board, planchette, automatic writing) represented a progression from the less to the more abnormal. Thought- or muscle-reading is but the normal accompaniment of continued attention and expectancy; table tipping requires somewhat more abstraction; with the ouija board and planchette come indications of dissociated functioning; and in automatic writing there is very definitely a dissociation of function. For this reason it should be pointed out that from the hygienic point of view all such, especially the latter, are very undesirable. Success with the planchette and automatic writing seems to be indicative of a psychasthenic condition. If so, then the continued production of these states would certainly not be good hygienic practice.

Physical Phenomena with Trance States. Certain physical phenomena of mediumship produced in, or accompanied by, a trance state have been much studied. These do not necessarily, however, have anything to do with spiritism and the spiritistic hypothesis. Students of these phenomena who do not reject it all as fraud claim that they present evidence for some sort of supernormal powers deserving of scientific consideration. The nature of the phenomena reported is curious. The medium, usually a woman, is seated at one end of a table, goes into something resembling a trance state, and in this state is apparently able to move objects at a distance, lift tables, produce in the consciousness of the sitters the experience of being touched by something like human hands, cause such a breeze in the air as to blow curtains, produce lights, make impressions in clay, materialize heads, hands, arms, and even entire human beings. Ordinarily such things are done in the dark or in subdued light. Much time and money has been spent in the investigation of such phenomena as these, and some very able minds have admitted their conviction by them as evidence of supernormal powers. All such effects are, however, producible by modern

magicians¹ without any claims to supernormal power, merely by unusual skill in the production of illusions.

The greatest of this type of medium was an Italian peasant woman, Eusapia Paladino, whose work has often been described. She was repeatedly caught in fraud and for this reason has been generally dropped from serious consideration.² It must be admitted that she was exceptionally skillful with her hand and foot after she had obtained their release by familiar tricks. The claim is also made that while Paladino and others of this kind do at times resort to fraud, such acts are not to be accepted as characteristic of all of their work.³ The fraud according to this argument is resorted to only at such times as the supernormal powers seem not responsive or easily activated. They will delude their sitters rather than disappoint them. While such is possible, it would seem the part of wisdom and scientific procedure never to use fraud; and also, it may be added, that mediums so skillful in fraud must have had much practice.

Where the actual means used by the mediums for the production of these physical phenomena has not been determined a curious theory has been evolved. It is said that the physical phenomena are produced by an exceptionally subtle substance emanating from the body of the medium. At first this is highly fluid and scarcely visible, but it may become harder and clearly visible. By means of this substance, *ectoplasm* as it is called, the various phenomena are produced. Alleged photographs of it have been made in which the ectoplasm sometimes presents a thick, cloud-like appearance and at other times looks like a human hand. Perfectly controlled conditions for the prevention of fraud appear to reduce greatly the possibility of pro-

¹ Houdini, Harry, *A Magician Among the Spirits*. New York, Harpers, 1924. Pp. 294.

² Jastrow, Joseph, "The unmasking of Paladino," *Collier's Mag.*, 1910, May 14, page 21.

³ Carrington, Hereward, *The Physical Phenomena of Spiritualism*. New York, Dodd, 1920. Pp. 426.

ducing these physical phenomena. On the other hand it is claimed that the control conditions not only prevent fraud but prevent the possibility of their appearance at all. While this position may be logically defensible it is also true that where so much fraud has been found the burden of proof for anything but fraud rests heavily upon those who make claims for any supernormal agency.¹

While trance states in general are to be discussed below, some mention should be made here of the trance states into which this type of medium seems to go. The descriptions are often if not usually quite unsatisfactory from the point of view of psychopathology. There are to be found, however, mentions of heavy breathing, convulsive-like seizures, weakness, and subsequent amnesia. Feilding reports² that Paladino did not always go into the trance state promptly, that sometimes she kept the sitters waiting for periods up to even an hour and a half. Yawns indicated the coming of the trance. These states varied in depth, the deepest ones being like a deep sleep. The psychogenic theorist will be attracted by the statements that there were at times evidences of an intrapsychic conflict. It seems that in very deep trance states Paladino was controlled, or appeared to be, by a spirit called John King. In the lighter states this control condition did not appear, the self of Paladino being in command. There were also, and most significantly, halfway states in which there was a conflict between Paladino

¹ The most talked about instances of ectoplasmic phenomena in recent years have appeared in the work of a medium known as Margery. The substance of her work and the literature about her may be found through the following: Hoagland, H., "Science and the medium: the climax of a famous investigation," *Atlantic Mo.*, 1925, 136, 666-681. McDougall, Wm., "The Margery mediumship," *Psyche*, 1926-27, 7, (Oct.), 15-30. Prince, W. F., "A review of the Margery case," *Amer. J. Psychol.*, 1926, 37, 431-441. Rhine, J. B. and L. E., "One evening's observations on the Margery mediumship," *J. Abn. & Soc. Psychol.*, 1927, 4, 401-421. For other material on ectoplasm see Schrenck-Notzing, A. F. von, *Phenomena of Materialization*. London, Kegan Paul, 1920. Pp. 362.

² Feilding, E., "Recent experiments in the 'Physical Phenomena,' of spiritualism," *Nineteenth Century*, 1909, 66, 789-803.

and John King. King would make signals through the tipping table which were opposed by Paladino. Such statements at once bring to mind the whole psychology of hysteria in which conflicts between subordinate or secondary states or syntheses or drives and the content of the self or the self-synthesis are quite familiar. Perhaps a complete analysis of Paladino would have revealed repressions and complexes explanatory of all her behavior, sincere and fraudulent together. Attention has unfortunately been more upon the physical phenomena than upon the psychology of the woman who produced them.

Telepathy and Allied Phenomena. The phenomena called telepathic, and their later companions, telesthesia and telekinesis, must be considered before any full discussion of trance mediumship can be wisely undertaken. The substance of the various definitions can be reduced to this, telepathy is the communication of thought from mind to mind by other than the usual means of sensory stimulation. Telepathy is a direct effect of mind upon mind, in contrast to the indirect nature of normal communication by way of sense stimulation. Telesthesia is the sensing or perception of objects or conditions or processes prevented by location or time from stimulating sensation and perception in the normal manner. Frequently this is termed clairvoyance; and the term cryptesthesia is sometimes, although less often, used for the same alleged power. Myers¹ adds that telesthetic phenomena in order to be certainly telesthetic must occur under such circumstances that they cannot be attributed to telepathy from another mind. Whether or not any portion of the sensory and perceptive apparatus is utilized in telesthesia seems uncertain. Some authorities are inclined to think that some portion of the perceptive apparatus is utilized although aroused into function by other means than direct sense stimulation. Telekinesis is the

¹ Myers, F. W. H., *Human Personality and its Survival of Bodily Death*. New York, Longmans, 1920. 2 vols.

alleged production of effects like those produced by physical energy but at a distance and by some supernormal power. The physical phenomena of spiritism just presented would be of a telekinetic nature. The term telekinesis is often used as if implying physical effects produced by forces similar to or identical with those which are supposed to produce telepathic and telesthetic effects.

The evidence for telepathy as presented by the students of the supernormal is surprisingly voluminous. Extensive collections have been made, numbering into the thousands, of instances of alleged cases of communication from mind to mind. By far the larger part of these are of the spontaneous variety, that is, they have occurred wholly apart from any conditions of systematic study. Consequently, they have as a rule been observed and reported by people who were quite untrained in observation and report. The critical mind will find in these reports many lacunæ which seem most damaging. Quite essential items are often missing, because the author was intent on reporting that which seemed to be supernormal, and such items as contributed to the supernormal appearance of the event. Premonitions of disaster and death appear repeatedly. Some think or imply that minds facing disaster are activated into the production of telepathic influence upon the minds of their friends and loved ones. There are also many instances of coincidence of thought, two people walking together think and speak of the same thing, or friends at a distance thinking and writing of identical things at the same time. Such telepathies are little affected by distance. Communication half-way round the earth appears to be as easy as across the street. The effect of the telepathic influence upon the recipient mind may be either cognitive or emotional, but more frequently the former. Also, many alleged experimental studies appear. A person interested in psychic research sits down at a recorded time and attempts to project himself into the mind of his distant friend by concentration. Reports of successful attempts of this va-

riety appear, but how often they have failed no one knows. Attempts a bit more systematic have been made in the efforts to communicate across a room or through the wall into an adjacent room certain carefully prepared words or diagrams or a list of names of playing cards. Where such experiments present more than fifty per cent correct responses, and some present considerably more, they are offered as experimental evidence for telepathic communication.

Less attention has been given seemingly to telesthesia. Often the cases reported do not entirely eliminate, as Myers so wisely cautioned, the possibility of the experience being telepathic from some other human mind. The evidence is usually of the spontaneous variety, the reporting of instances of perception of the location of lost objects, the content of unopened envelopes and packages, and the nature of the present activities of distant people. Although in the last two varieties the possibility of telepathy is obviously not eliminated.

A most impressively thorough experimental study on the possibility of telepathic communication was made some years ago by J. E. Coover. Under the most carefully arranged conditions he found that the frequency of hits was the same as should occur by a mathematical calculation for chance. Still more significant is the fact that he obtained the same results when the percipient supposed the sender to be thinking of a number and was not. The method was to have the sender draw a block bearing a number from a sack and think hard of it, at the same time signaling the percipient that he was so doing. But if the block were drawn upside down he concentrated on the back of the block with careful provision against thinking of any number. The percipient did not know that the sender was not thinking of a number and proceeded on the supposition that a number was being sent to him. The following table, condensed from Coover's results,¹ indicates the substance of them:

¹ See Coover's *Experiments in Psychical Research*, p. 39.

	<i>Whole No. Correct</i>	<i>Tens Correct</i>	<i>Units Correct</i>
Number imaged	1.00%	12.8%	10.2%
Number not imaged	1.18%	11.1%	9.1%
Probability	1.23%	12.5%	10.0%

Apparently then telepathy works as well when the sender knows he is sending as when he does not, and all are productive of no frequency greater than that of chance. To the charge that this work was done with subjects who were not "sensitive," it is only necessary to reply that Coover also worked with several so-called "psychic sensitives" with no better results.

Critics of Coover have contended that some of his subjects did show a frequency of hits sufficiently above chance to warrant their isolation and special study. This argument is obviously related to the belief that telepathy, or telesthesia, is a power or capacity of some sort not to be found in all persons, perhaps only in a very few individuals. More recently J. B. Rhine and his associates have followed this plan. Out of a very large number of subjects tested a very few were found who manifested capacity for making high scores in what Rhine calls extra-sensory perception.¹ Most of his work was done with a few simple figures or symbols. With these few subjects he apparently found correct readings, or answers, or extra-sensory perceptions, in frequencies which appear to be far above chance. Caffein apparently increased the accuracy of their work and sodium amytal reduced it. Changes appeared from time to time. Some improved and some declined in their ability. Rhine thinks that he has demonstrated the existence of a special function in these particular subjects. What others will think and to what extent similar experimentation in other environments will substantiate his work remains to be seen.²

¹ Rhine, J. B., *Extra-sensory Perception*. Boston, Society for Psychic Res., 1934. Pp. xiv, 169; "Extra-sensory perception of the clairvoyant type," *J. Abn. & Soc. Psychol.*, 1932, 29, 151-171; "Telepathy and clairvoyance in the normal and trance states of a 'medium,'" *Char. & Per.*, 1934, 3, 91-111.

² Rhine appears also to believe in the possibility of telepathic or extra-

The popular notion that one can attract the attention of another by staring, when reduced to experimental procedure, produces essentially negative results. Whenever the feeling of being stared at actually coincides with the fact, it is to be otherwise explained than by telepathic influence.¹

While *crystal gazing*, or *srying*, is not ordinarily considered a spiritistic phenomenon it is nevertheless closely allied in nature to the phenomena discussed in this chapter. Its technique is simple. The gazer is seated at a table and the crystal (usually a glass sphere, although a glass of water may be quite as successfully used) is placed directly in front. The attention is centered within the crystal and the gazer, concentrating, awaits patiently the coming of the visions. These appear as pseudo-hallucinations of normal size, displacing temporarily the crystal from the field of vision. The content of these pseudo-hallucinations or crystal visions has attracted much attention in certain circles. They have been welcomed as revelations from the allegedly great and powerful subconscious, and have even been interpreted as prophetic. The procedure will at once be recognized as allied to the fixation procedure in the induction of hypnosis, although the expectation aroused is quite different. As the crystal visions experienced are, by virtue of the method used, necessarily motivated from within the gazer, they must be of psychogenetic origin. They must then be allied to dreams and the uncontrolled conscious experiences of the psychoneuroses.²

Ghosts and apparitions must be included with this general type of phenomenon. Of these there are countless reports all through the course of history. Many communities have their

sensory communication from the human to the animal mind. See Rhine, J. B. and L. E., "An investigation of a 'mind reading' horse," *J. Abn. & Soc. Psychol.*, 1929, 23, 449-466.

¹ Coover, J. E., "The feeling of being stared at — experimental," *Amer. J. Psychol.*, 1913, 24, 570-575.

² Mühl, Anita M., "Automatic writing combined with crystal gazing as a means of recalling forgotten incidents," *J. Abn. & Soc. Psychol.*, 1924, 19, 264-273.

haunted houses; and in many families there are legends of apparitions. Some of these are auditory, some visual, some tactual-kinesthetic. Sometimes more than one sense is involved in a given experience. Ghosts are reported in all degrees of illumination from the full light of day to total darkness, some are opaque, some translucent, and some transparent. Usually they move about easily and rapidly if they are of any considerable duration. Some speak but many do not. Some ghosts are heard but not seen. Some make their presence known by noises merely, as in the nature of footsteps, while others speak intelligibly. Some appear only as they affect the physical environment in the manner of distant or dead friends or relatives. Instances are reported of pianos played with the recognizable touch of a departed friend. Some ghosts make their presence known only by touching some portion or portions of the body of the percipient. While yet others manifest their presence by arousing that vague experience now best described as a general-awareness-of-a-presence. Such appearances usually occur to minds highly expectant or emotionally distressed, although it is only fair to say that sometimes the apparition is experienced by placid minds wholly unexpectant. Believers in the supernormal explain in terms of telepathy, telesthesia, and direct manifestations from the spirit world.

Lastly *dowsing* is to be included. Dowsing is the more technical term for the peculiar stunts of people commonly called "water witches." While water finding is the most frequent form of dowsing there are reports of other forms; precious metals are said to be localizable by some dowsers and possibly even the presence of oil. The procedure is usually that of carrying a pliable forked stick or twig, the branched ends in the hands or between the fingers while the single end projects forward or downward. Thus equipped the dowser walks about the country until the twig moves by bending downward, or otherwise, although the downward-pointing movement is the more common. Under the place indicated the sought-for substance, usually

water, will, it is said, be found. Many instances of success are reported.

All of these phenomena are presented as evidence for the existence of some means of communication from mind to mind, from mind to objects and from objects to minds by other than the now known means. The amount of evidence offered is so voluminous as to justify serious consideration. Concerning telepathy, it has been argued that man is making no departure from scientific procedure when he recognizes the existence of a force, names it, and takes it into consideration in the interpretation of phenomena, long before he knows the nature of this force. For example, electricity may be cited, which was recognized, named and actually used commercially, long before its nature was even approximately known. With this argument no one will quarrel, but there may be serious question if the evidence justifies assuming the existence of this new force. Doubtless few students of the subject will give serious consideration to the claims and demonstrations of telepathy constantly appearing in vaudeville theaters. Clever as such performers often are in the deception of their audiences, it must nevertheless be obvious that the performers in spite of their claims have actually not reduced telepathy to such a high degree of precise control. If they had they would not continue in the precarious profession of the vaudeville performer but would set up in business for the communication of commercial messages from one large city to another. The overhead expense of such a business would be so insignificantly small as to make for the discoverers of the secret fabulous profits. If fame were what these alleged discoverers sought, they would be far more certain of its achievement if they were to publish all the details of their great discovery for the scientists of the world to study, apply, and applaud.

Sources of Error and Explanation. In the examination of any given case of alleged telepathic, telesthetic or telekinetic demonstration several sources of error must be considered.

First of all are the errors possible in observation and reports (1). Possibilities of illusion and all omissions and inaccuracies of observation of detail must be eliminated. Such eliminations can be achieved only by repetition, and so long as the evidence for telepathy remains in the form of spontaneous cases occurring under conditions which preclude the possibility of repetition and systematic observation, such sources of error cannot be assumed to have been eliminated. Doubtless many instances of alleged telepathic communication are actually due to the responsiveness of individuals to those ordinarily unobserved, obscure, unconsciously made signs studied by Pfungst and Stratton.

Coincidence of thought (2) is another common source of error often overlooked or underestimated. Vaschide has rightly made much of this.¹ Two persons walking together and suddenly beginning to speak of the same thing is poor evidence for telepathy. The fact that the two persons are walking together is indication that they have something in common, probably very much. If they are citizens of the same town, reading the same newspapers, and concerned with the events of that community, they have a vast number of habits and memories in common. Two students in the same university, although perhaps working in very different fundamental studies, nevertheless have many experiences in common, and have had for a considerable number of years. In such instances it would be remarkable if there were not very frequent coincidences of thought and expression. The same is true of persons far apart. Friends far separated often think of each other, although they do not write. That they should think of similar things is but the natural consequence of their similar organization. The studies of "cross-correspondence" to be mentioned below present clean-cut evidence of this coincidence.

The now familiar tendency to emphasize the positive and

¹ Vaschide, N., "Experimental investigations of telepathic hallucinations," *Monist*, 1902, 12, 273-307, 337-364.

neglect negative cases (3) is ever present in these reports. The amassing of thousands of coincident thoughts and perceptions cannot prove the existence of a supernormal force even though all other sources of error be eliminated. The failures of efforts to communicate are equally important. The vast numbers of people who die, and die tragic deaths alone and longing for their friends, without influencing the minds of their friends in a noticeable manner, are equally important with this comparatively small number of alleged cases of such influence. But this far vaster number of negative cases is usually neglected by the students of telepathy. Such a searching for evidence which collects only positive cases is obviously a prejudiced procedure. It is even worse than the old-time anecdotal method in animal psychology.

The influence of memory distortions (4) often seems to be present. There are the involuntary alterations occurring in the occasional recall and retelling of an interesting incident. And as the events usually involve the tragic, the distressing, or at least the dramatic, the effects of emotional disturbance may always be expected. The alleged experimental studies of telepathy and telesthesia usually lack also a recognition of what might be called the human coefficients (5) for numbers, cards, events, and designs. It has been well demonstrated that the direction to a human subject to draw any diagram that comes into mind will not result in a chance production which can be estimated as one of an infinite number of possibilities. All human beings when told to make a few diagrams will make many which are identical, squares, triangles, circles, etc. As these appear very frequently they have therefore a high frequency of likelihood of production. Thus if one person is asked to think of the diagram just drawn by another person in an adjoining room there is a very high probability that he will produce in a few trials at least the same or nearly the same as produced in the other room. If the sender in such an experiment thinks of a single playing card, the name of which has

come to his mind by chance, there is far more than one chance in fifty-two of the other person in the experiment thinking of the same card because of this fact of human coefficients. Practice with playing cards results in habits which lead to the preferential thinking of certain cards more frequently than of others.

In the *explanation of ghosts and apparitions* much that has already been said of telepathy is applicable. There are the inaccuracies of observation and the familiar distortions of memory. Where the ghost is both unseen and unheard, merely "felt," the investigator should seek carefully to eliminate the possibility of some unnoticed stimulus, which had been in some way associated with the departed, effecting the familiar attitudinal response or consciousness of a presence¹ which to the experiencer is without any apparent normal source. Auditory, visual and cutaneous experiences of ghosts may often be of a truly hallucinatory nature. It is of great importance to determine the mental condition and history of the person experiencing such a phenomenon. Ordinarily the experiencer is neglected for the experience, an error of procedure which leads to yet greater errors. The person who is longing for the touch of a vanished hand and the sound of the voice that is forever stilled may also be in a neurasthenic or psychasthenic or psychoneurotic condition or even worse. Such a general condition, plus the deep longing and its emotional background, gives to the ghostly experience a familiar psychogenic pattern, the realization of a wish.² The after history of the persons whose experiences gave rise to ghost stories is rarely reported. Perhaps the early hallucinatory experiences of those who subsequently became clearly psychotic first gave rise to many ghost stories.

It is likely, however, that by far the larger number of ghosts

¹ See the author's presentation of this in connection with religious experience in his *Psychology of Religious Adjustment*. New York, Macmillan, 1929. Pp. 148-152.

² Willoughby, R. R., "Ghosts of the sophisticated," *J. Soc. Psychol.*, 1934, 5, 508-515.

have their explanation in the familiar and relatively simple psychology of illusion. People go bravely to sleep in haunted houses and experience the haunt because of the mental preparation which readily misinterprets some intruding stimulus of an unusual nature. After reading ghost stories, people aroused in the night misinterpret the creaking of the stairs, as they contract with the falling temperature, as a ghost descending the stairs. Often the fright aroused puts to rout all possibility of a genuinely thorough examination of the conditions under which the event occurred. But there are yet other possibilities. Swindle,¹ in a most ingenious study, has demonstrated the possibility that ghosts may often be but the appearance of a delayed positive after-image. He stimulated the eye of a subject and then plunged him immediately into a perfectly dark room. After keeping him there for a considerable period of time, he stimulated the same eye very slightly by permitting a light to fall upon the closed eyelid. This produced a clear positive after-image, which, although much delayed, was projected in the usual manner. The student should also recall the difficulty constantly experienced in holding an after-image upon any fixed place in the field of projection, usually attributable to the fact that the procedure for producing the image results in its projection slightly aside from the center of the visual field. This sets up the natural reflex, moving the eye so as to bring the object upon the fovea, with the result of course of still further moving the projected image.

Assuming the accuracy of Swindle's results, it may then be that many apparitions are but delayed after-images. A man might bid good night to a friend in a brilliantly illuminated room and plunge immediately into the darkness of a walk home through the woods. As he approached the light of a clearing, or as some dim starlight slightly stimulated his eyes, there might be aroused this delayed positive after-image, which would be

¹ Swindle, P. F., "Visual, cutaneous and kinesthetic ghosts," *Amer. J. Psychol.*, 1917, 28, 349-372.

projected and which would jump about in the familiar manner of ghosts.

Martin,¹ in a valuable paper, suggested that perhaps the people who experience ghosts have a greater facility than others in the forward projection of their imagery. Our memory images seem as a rule to be in a vaguely general backward or cerebrally inward direction while our sense perceptions are projected outward. Since that paper was published, however, the psychological world has learned of the existence of eidetic imagery, that peculiar form of imagery which is characterized by outward projection and the attributes of a sensory process. Not many adults have such imagery; and not many people see ghosts. It is quite within the range of possibility that the persons who do see ghosts are also persons who have eidetic imagery, that the ghostly experience is really an intruding eidetic image.²

In the *interpretation of dowsing*³ one must consider the frequency of involuntary muscular movements of very slight degree accompanying perception and thought. Such movements could readily be magnified and made apparent by means of the dowser's rod, as they are by the automatograph in the laboratory. The mere statement by an author that there is no evidence of fraud may perhaps be taken at its face value, but the psychologist will smile at the statement of no voluntary movements as evidence for some external influence upon the rod. Just as the hands respond to very slight tremors of the tipping table

¹ Martin, L. J., "Ghosts and the projection of visual images," *Amer. J. Psychol.*, 1915, 26, 251-257.

² The author has carefully examined one such case, in which there was both marked eidetic imagery and much seeing of ghosts.

³ For discussions of this phenomenon see: Browne, C. A., "Observations upon the use of the divining rod in Germany," *Science*, 1931, 73, 84-86. Bryant, E. C., "The divining rod," *Science*, 1931, 73, 365. Gregory, J. W., "Water divining," *Annual Report Smithsonian Inst.*, 1928, 325-348. (A most valuable presentation of the history, literature, and experimental studies.) Moorehead, W. K., "The divining rod and fakers," *Science*, 1931, 74, 42-43. Richet, C., *Thirty Years of Psychic Research*. New York, Macmillan, 1923. Pp. 646. Tolmachoff, I. P., "The use of the divining rod in gold prospecting in Alaska," *Science*, 1931, 73, 365-366.

and involuntarily assist in its further movement, so the hands of the dowser, who is expectantly attentive, may respond to some significant features in the terrain quite without a detailed awareness of the process on the part of the dowser. We constantly respond to slight facial expressions in our estimates of character, the details of which we cannot enumerate, and often judge correctly. The dowser may respond to features of the landscape in like manner and often succeed. It may be also that his percentage of hits is much higher because of the very great frequency of subterranean streams and water-carrying formations.

In all of this business of telepathy and telesthesia, ghosts and apparitions, and dowsing the students of its psychology will not fail to observe the readiness with which the human mind projects the cause of its experiences. Thoughts, perceptions, images, and movements are described as having an external source with but the hastiest of examinations into the possibility of their origin being within the experiencing organism. And then, when no common physical stimulus is apparent for the explanation of that which has been so readily attributed to external powers, instead of turning back to the human organism for a more searching look, there is the development of theories of supernormal forces. Perhaps this may some day be found to be identical with the tendency in the psychoses to seek an external source for hallucinations as well as the troubles and discomforts of daily life.

Trance States. The student should now be prepared for a consideration of genuine trance states and the phenomena which accompany them. While it is safe to say that most mediums are frauds, it is equally certain that there are some mediums who do actually go into some form of mental condition quite different from the normal waking state, and that in this state they produce intelligible material either by writing or speech. The convinced spiritist believes that this secondary or trance state, as it is termed, is a condition in which or by means of

which communication with spirits in another world is possible. Ordinarily the procedure of communication between this world and the other, assuming for the moment that such is the case, is somewhat cumbersome and indirect. The sitter comes into the presence of the medium and when all is ready the medium goes into the trance state. In this trance state the voice or the hand of the medium is supposed to be operated by a spirit in the other world technically called "the control." This control seems to act as the medium or manager on the other side because it is through the control that the desired spirit in the other world is found and brought for communication. As a rule the communication is from the sitter to the hand or ear of the medium in trance to the control and thence to the spirit of the departed friend. The departed friend then answers by speaking to the control, who in turn utilizes the voice or hand of the medium for expression in a manner intelligible to the sitter.

This secondary or trance state at once attracts the attention of the student of abnormal behavior. He wants to know not only all the possible details of the behavior in the trance, going into and coming out, but also the personal history of the subject and the condition following each trance. Such material is most readily available from the studies of Mrs. Leonora Piper who ranks among the greatest of all mediums. Fortunately she has been extensively studied and so a wealth of material is available for psychological consideration.¹ She is also selected for consideration because no one, not even the most skeptical, ever seems to have long entertained any question of her honesty. The trance states of Mrs. Piper never came on, unless with the possible exception of the very early ones of which there is inadequate record, except when there was a sitter ready and waiting and the usual arrangements completed. Appointments for future trance states were often made in the trance, ostensibly by the control.

¹ The material here briefly summarized appears in full in the *Proceedings of the Society for Psychic Research*, Holt's *On the Cosmic Relations*, and in Tanner's *Studies in Spiritism*.

When the sitters were ready, Mrs. Piper was seated at a small table upon which were placed two or three pillows. The conversation with her sitters became more and more desultory, a sleepy expression came over her, the eyes became fixed and staring, the mouth dropped open, the breathing was slowed, and the head gradually fell forward onto the pillows. In the earlier trances, when she was still somewhat afraid of them, there was much expression of pain, sighs and groaning; sometimes the whole body seemed in a mild convulsion. Twitchings of the face were not infrequent, and sometimes there was incoherent talking. The process of going into the trance state ordinarily occupied about five or six minutes. Then the right hand groped for the pencil and paper which had been placed conveniently on the table. The hand began to write and announced the presence of the control.

In the early trances communications were vocal; later the method changed and the sitter spoke to the control by speaking into the upraised right hand of the medium, somewhat as in speaking into a telephone transmitter, while the control answered by writing. The control's penmanship was usually rather bad and much, very much, was illegible. Often it was necessary to ask the control to repeat in order to get a legible answer. In this trance state, the experiments and observations of Tanner and Hall indicated that the hand was anesthetic to a considerable degree, the eyes seemed to be so completely covered as to prevent stimulation, both ears were uncovered and apparently functioning normally because whispered comments by one sitter to another were often responded to by the control.

The trance state usually lasted from an hour and a half to two hours and was ended by the control. Coming out of the trance occupied about three times as long as going in, from fifteen to twenty minutes. The head rose slowly, the face much drawn in painlike expression, often there was weeping and an expression as of disgust. As the eyes opened, they stared in-

tently, as if at some object. The dawning of normal consciousness was heralded by vocal comments or ejaculations much as in the slow waking from a deep sleep in the presence of others. Then came the request to know if the sitters had heard her head "snap." After this there was recognition, although for a little longer she appeared dazed or sleepy and disinclined to move much. After the trance was entirely concluded, there was complete amnesia for all that had taken place during the trance state. It is asserted that the writings of her controls, if read by her, never produced the slightest feeling of familiarity or indication of recognition, so complete was the severance between the trance state and her waking state.

The *medical history* of the *Piper case* is also enlightening. It can be briefly summarized. At the age of sixteen, which will be at once recognized as the unstable period of mid-adolescence, there was a coasting accident in which she was rendered unconscious, seeing a flood of light as the accident occurred. Not long after this an ovarian tumor developed. She married and at about the age of twenty-five had her first child. Six weeks after the birth of this child, when still in a delicate condition as a consequence of both the childbirth and the tumor, she was in the presence of a medium to whom she had gone for advice concerning her condition. Twitchings appeared with the fear that she might lose consciousness, not an unusual state, of course, for a woman in her condition. The medium placed his hands on her head and she lost consciousness; again the loss of consciousness was accompanied by a flood of light. This loss of consciousness was interpreted by the medium as the dawning of mediumistic powers in Mrs. Piper and as such it was welcomed and its recurrence anticipated. Sixteen months after the birth of the first child the second was born. Nine years later there was an operation for the removal of the tumor and diseased tissues. Three years later there was an operation for hernia. Her history is one of delicate health. Also a close examination will reveal that her mediumistic work seems to be

directly related to her health. The better her health the poorer her mediumistic powers. The last period of good trance work was at the normal age for the menopause, also familiar as a cause of mental disturbance. The operation for the removal of the tumor, if correctly reported, should have produced the physiological changes of the menopause. Even in such cases, however, there is evidence of some physiological disturbance coming at the normal age for the menopause. Perhaps this was true in her case.

During these years of mediumistic work, the waking Mrs. Piper is reported to have been a very impulsive person, hasty in decisions and prompt to act upon a decision made. The nature of her work made her hesitant to mix much with other people; hence she led a comparatively isolated life. She often had premonitions. Her memory for faces and names was poor while her memory for voices was exceptionally good. This is in accord with the auditory response facility in her trance work. She was not readily hypnotizable. This is not, however, surprising as it has already been pointed out that many hysterics are not easily hypnotized. Her whole attitude toward her work and mental abnormalities (she is said to have refused to permit her daughter to develop mediumistic powers) probably negated attempts to hypnotize.

The further investigation of the trance states of Mrs. Piper and the study of the history of the controls justifies the assumption of a community between the trance personality and the normal, or waking, Mrs. Piper. In the trance states Tanner and Hall found likes and dislikes similar to the waking state, the trance state was very sensitive to bad air and so was also the waking state. A carefully prepared and introduced phrase of a peculiarly distinctive nature was used in conversation with Mrs. Piper prior to the trance; in the trance the control used almost the identical phrase. The first control bore a name strikingly like the control of the medium to whom she had gone for advice. Other and subsequent controls were those of de-

ceased mediums of whom she had read or of persons in whom she had been interested.

Tanner has observed that, aside from the communications, the Piper case is like an hysterical somnambulism. There is the succession of organic conditions producing nervous instability, the accident on the hillside, with its accompanying fright, the familiar visual hallucination and the loss of consciousness, the repetition of the loss of consciousness with the same light experience, the staring and expressions of pain upon going into the secondary state and the sleeplike condition of the trance — all followed by the familiar hysterical amnesia for the events of the trance, although with a memory carry-over from one trance state to another. It is strikingly like the case of hysterical fits of sleep described by Janet. The improvement of her trance work with declining health and the decline of trance work with improving health reminds one forcibly of the changes Janet points out in psychological tension, a lowered tension being essential to hysterical phenomena. The Piper case differs only in the presence of the automatic writing. It will be recalled that in Janet's cases of hysterical fits of sleep he found it possible to set up some slight communication with the hysterical subject through slight signal movements of the hand or eyes. In the Piper case this was quite evidently educated into automatic writing. And in the Piper case there is the additional feature of a continued desire for the trance states to come and for communications to take place in them. That Mrs. Piper early feared the trance states argues little to the contrary. While she may have feared them, she lived in an environment which hoped for them; and she herself apparently did not fight against them sufficiently to take her to a competent specialist in nervous and mental diseases. The reported fighting against the trance states sounds more like the conflict between the normal and the secondary state mentioned above in the Paladino case. All of which suggests psychogenic features of which we have at present too little knowledge.

Another which bears many similarities to the Piper case and which has been carefully presented is that of Mlle. Hélène Smith as reported by Th. Flournoy.¹ Here there is a long history of secondary states in which are productions thought by some to be of a spiritistic nature but which upon careful analysis proved to be hysterical productions of the subject herself. Here too will be found a significant antecedent history of states of abstraction and recurrent hallucinations.

Mediumistic "Communications." In conclusion, it is wise to think a little of the nature of the alleged communications from the other world. It has been argued that the interpretation of the trance states as of an hysterical nature does not set aside the spiritistic hypothesis, but that only in trance states can good spiritistic communications be established, because the waking state of a human being is so absorbed by the affairs of this world as to be impervious to the efforts from the other to communicate. Thus attention has been focused upon the content of the communications. Efforts have been made to sift them for the discovery of material which was not known to either medium or sitter, in order to eliminate everything which might have come out of the medium's own past or have been achieved by "fishing" from the sitter (inadvertently hinted at or revealed by the sitter). If after such a sifting there could be found a residuum of material known neither to sitter nor medium, then that has been pounced upon as evidence of supernormal power.

Here the telepathy doctrine has entered in as a two-edged sword. It cut valiantly for the doctrine of supernormal power, but it also cut away all necessity for a spiritistic hypothesis. If telepathy knows no conditioning or limiting effect of space and can operate through the unconscious, then there is no need of the spiritistic hypothesis to explain any communication of a medium, no matter how extraordinary. This has often been

¹ Flournoy, Th., *From India to the Planet Mars*. New York, Harper, 1900. Pp. 446.

ceased mediums of whom she had read or of persons in whom she had been interested.

Tanner has observed that, aside from the communications, the Piper case is like an hysterical somnambulism. There is the succession of organic conditions producing nervous instability, the accident on the hillside, with its accompanying fright, the familiar visual hallucination and the loss of consciousness, the repetition of the loss of consciousness with the same light experience, the staring and expressions of pain upon going into the secondary state and the sleeplike condition of the trance — all followed by the familiar hysterical amnesia for the events of the trance, although with a memory carry-over from one trance state to another. It is strikingly like the case of hysterical fits of sleep described by Janet. The improvement of her trance work with declining health and the decline of trance work with improving health reminds one forcibly of the changes Janet points out in psychological tension, a lowered tension being essential to hysterical phenomena. The Piper case differs only in the presence of the automatic writing. It will be recalled that in Janet's cases of hysterical fits of sleep he found it possible to set up some slight communication with the hysterical subject through slight signal movements of the hand or eyes. In the Piper case this was quite evidently educated into automatic writing. And in the Piper case there is the additional feature of a continued desire for the trance states to come and for communications to take place in them. That Mrs. Piper early feared the trance states argues little to the contrary. While she may have feared them, she lived in an environment which hoped for them; and she herself apparently did not fight against them sufficiently to take her to a competent specialist in nervous and mental diseases. The reported fighting against the trance states sounds more like the conflict between the normal and the secondary state mentioned above in the Paladino case. All of which suggests psychogenic features of which we have at present too little knowledge.

Another which bears many similarities to the Piper case and which has been carefully presented is that of Mlle. Hélène Smith as reported by Th. Flournoy.¹ Here there is a long history of secondary states in which are productions thought by some to be of a spiritistic nature but which upon careful analysis proved to be hysterical productions of the subject herself. Here too will be found a significant antecedent history of states of abstraction and recurrent hallucinations.

Mediumistic "Communications." In conclusion, it is wise to think a little of the nature of the alleged communications from the other world. It has been argued that the interpretation of the trance states as of an hysterical nature does not set aside the spiritistic hypothesis, but that only in trance states can good spiritistic communications be established, because the waking state of a human being is so absorbed by the affairs of this world as to be impervious to the efforts from the other to communicate. Thus attention has been focused upon the content of the communications. Efforts have been made to sift them for the discovery of material which was not known to either medium or sitter, in order to eliminate everything which might have come out of the medium's own past or have been achieved by "fishing" from the sitter (inadvertently hinted at or revealed by the sitter). If after such a sifting there could be found a residuum of material known neither to sitter nor medium, then that has been pounced upon as evidence of supernormal power.

Here the telepathy doctrine has entered in as a two-edged sword. It cut valiantly for the doctrine of supernormal power, but it also cut away all necessity for a spiritistic hypothesis. If telepathy knows no conditioning or limiting effect of space and can operate through the unconscious, then there is no need of the spiritistic hypothesis to explain any communication of a medium, no matter how extraordinary. This has often been

¹ Flournoy, Th., *From India to the Planet Mars*. New York, Harper, 1900. Pp. 446.

the cause of very active discussion among those devoted to the study of the supernatural. All such residual findings in the mediumistic communications might be obtained by the medium telepathically from the sitter's own unconscious, or from the minds, conscious or unconscious, of any one on earth. It would even be possible for some one now dead to have left before death a telepathic impression upon the medium's mind which never became evident until the particular communication under discussion appeared. The advocates of the spiritistic hypothesis, however, contend for both the doctrine of telepathy and the spiritistic theory, that the one supplements the other. They argue that there is telepathy between minds on this earth, and also that by telepathy the minds of the departed communicate back to this world.

The amount of this residual material in the communications is very small. One must always recall that a vast amount of the speech or writing of the mediums studied is never preserved. Much of it is hopelessly unintelligible and for that reason rejected, although to the student of psychology this amount of verbigeration or vocalization or mere finger movement apart from consciousness is not without significance. Much more is never recorded because of its unimportant nature, unimportant that is from the point of view of the sitter. And the recording of every word that passes would be an almost impossible task unless a good stenographer were included in the sitting, which has rarely been done. Thus there is first the elimination of that which is unintelligible, then there is the elimination of that which might have come out of the minds of either the medium or the sitter. This means that the residual material bears a very small ratio to the amount of material produced, and is a very slim basis indeed for any far-reaching generalization.

An ingenious attempt has been made to get the spirits to check up on themselves by what is called the method of *cross correspondences*. Of this there seem to be two forms. In one the spirit is asked to communicate identical material through

more than one medium, preferably mediums far apart geographically, or to communicate material simultaneously through more than one medium which shall become intelligible only when the several communications are dove-tailed together. The other form of cross-communication is to assume that the spirits have already conceived this idea of communication through more than one medium and that a careful examination of the recorded communications through different mediums would reveal similarities and identities which could be taken as proof of spiritistic activity. Both methods have been alleged to be successful. The procedure of going over communications produced by different mediums at different times and in very different places for community of thought and expression is hardly defensible if the result is to be used as evidence of anything more than the general tendency of human minds similarly educated and interested to think of similar things and to use similar language. This must carry back to the telepathy discussion of coincidence of thought and the experimental demonstrations of such coincidence.¹ The other method of propounding a stunt to the spirits and asking for their co-operation is interesting, but the method of demonstration of their co-operation comes back to the same problem of coincidences.

Sealed letters or ciphers or symbols have been left in trust and locked securely in trust deposit vaults by people before death as a means of testing their power to come back after death and reveal the secret content to the world. Rewards have been offered for the successful revelation of the contents of such, but none have been successfully revealed. In a few instances revelations have seemed to justify the opening of the sealed letters, but never has the communication checked with the contents. There is one instance reported of a successful identification by means of a symbol agreed upon before death.² But this symbol

¹ See especially Tanner, Amy E., *Studies in Spiritism*. New York, Appleton, 1910. Chaps. VII and VIII.

² Stead, W. T., "How I know that the dead return," *Fortnightly Review*, 1909, 85, 52-64.

was not successfully brought across through a medium for several months and then only after a number of trials. This symbol was a cross in a circle, one of the very designs already known to have a high coefficient of frequency in human behavior.

Finally, if one should read extensively through the literature on spiritistic communication for information concerning the other world, he would discover some strange facts, if they be facts. The communications never reveal anything worth knowing. Of all the great problems of life with which man in his earthly limitations struggles, not one is solved, nor is their solution even aided, by the spirit world. The vast accumulations of knowledge and the wisdom of great minds are no longer available after the death of the individual in spite of the claims of the mediums. William James is alleged to have returned and communicated philosophic essays through mediums, but his philosophy has lost the creative spirit which once was James and his English style has lost its old-time brilliance. Charles Dickens came back and completed *Edwin Drood*; but in a fashion quite different from the notes which were subsequently found in his papers indicating how he expected to finish the novel had he lived. Mark Twain comes back and writes the most undesirable drivel, which no one cares to publish. Dr. Hodgson, who was for eighteen years manager for Mrs. Piper, came back eventually as the control of Mrs. Piper; but the Hodgson after death is sadly changed from what he was on this earth. If all this is to be accepted as evidence of what happens to minds after death, it makes of immortality a most undesirable addendum. Descriptions have appeared of the other world, as in the writings of Elsa Barker, but the other world as presented is but a denatured replica of this. It is far easier to think of all such as the automatic productions of dissociated brain states.

SELECTED REFERENCES

- Abbott, D. P., *Behind the Scenes with the Mediums*. Chicago, Open Court, 1907. Pp. 328.

- Coover, J. E., *Experiments in Psychical Research*. Stanford Univ. Press, 1917. Pp. 641.
- Cory, C. E., "Patience Worth," *Psychol. Rev.*, 1919, 26, 397-406.
- Flournoy, Th., *From India to the Planet Mars*. New York, Harpers, 1900. Pp. 446.
- Geley, Gustave, *Clairvoyance and Materialisation*. London, Unwin, 1927. Pp. 401.
- Gibson, Walter B., *Houdini's Magic*. New York, Harcourt, 1932. Pp. 316.
- Gurney, E., Myers, F. W. H. and Podmore, F., *Phantasms of the Living*. London, Trübner, 1886. Pp. 573.
- Holt, Henry, *On the Cosmic Relations*. Boston, Houghton, 1914. 2 vols.
- Houdini, Harry, *A Magician Among the Spirits*. New York, Harpers, 1924. Pp. 294.
- Lawton, G., "The psychology of spiritualistic mediums," *Psychoanal. Rev.*, 1932, 19, 418-445.
- Murchison, C. (Ed.), *The Case For and Against Psychical Belief*. Worcester, Clark Univ. Press, 1927. Pp. 365.
- Myers, F. W. H., *Human Personality and its Survival of Bodily Death*. New York, Longmans, 1920. 2 vols.
- Podmore, Frank, *Modern Spiritualism*. London, Scribner, 1902. 2 vols.
- Podmore, Frank, *The Newer Spiritualism*. New York, Holt, 1911. Pp. 320.
- Prince, W. F., "A review of the Margery case," *Amer. J. Psychol.*, 1926, 37, 431-441.
- Prince, W. F., *The Case of Patience Worth*. A critical study of certain unusual phenomena. Boston, Soc. for Psychical Res., 1927. Pp. 509.
- Rhine, J. B., *Extra-sensory Perception*. Boston, Soc. for Psychical Res., 1934. Pp. 169.
- Richet, Chas., *Thirty Years of Psychical Research*. New York, Macmillan, 1923. Pp. 646.
- Schrenck-Notzing, A. F. von, *Phenomena of Materialization*. London, Kegan Paul, 1920. Pp. 362.
- Tanner, Amy, *Studies in Spiritism*. New York, Appleton, 1910. Pp. 408.
- Triplett, Norman, "The psychology of conjuring deceptions," *Amer. J. Psychol.*, 1900, 11, 439-510.

CHAPTER XXI

THE HISTORICAL AND BIOGRAPHICAL BACKGROUND

ANCIENT CONCEPTIONS, HIPPOCRATES, GALEN, BOER-
HAAVE, PINEL, ESQUIROL, MESMER, GALL, GRIESINGER,
KRAFFT-EBING, KRAEPELIN, CHARCOT, BERNHEIM, RIBOT,
JANET, LOMBROSO, JACKSON, FREUD, JUNG, RIVERS.

Abnormal forms of human behavior have existed for a very long time, perhaps they are as old as man himself. The history of abnormal forms of behavior has never been written. If it ever is written, the chances are that the significant feature of such a history will be the presentation of the influence which each period had upon the form and the content of particular disturbances, perhaps also something of their relative frequency. The essential nature of the disturbances themselves seems to be the same wherever and whenever they appear.

Ebbinghaus once said that psychology has had a long past but a comparatively brief history. This is peculiarly true of the psychology of abnormal phenomena. The abnormal has been recognized as long as we know anything of man's observation of his own nature, but the psychology of abnormal phenomena is less than a hundred years old. Some of its founders are still living while the others have but recently died. To evaluate properly the contributions which these men have made depends upon a knowledge of the culture situation in which each worked. So in this chapter will be found a sketch of the history of thought about the abnormal, as well as some items about the more significant names and their contributions.

The ancient Egyptians left records of insanity which they interpreted as demon possession and which they sought to cure by music or mystical formulæ. The old Testament reveals

that the ancient Hebrews had some sad experiences with insanity.¹ They also interpreted such conditions as due to demon possession and used music to quiet or cheer the afflicted. Herodotus describes the instance of an insane king being confined in stocks and eventually committing suicide. The abnormal of mind were not infrequently looked upon as having supernatural sources of knowledge at their command. The soothsayers and sorcerers of old are supposed to have been insane or in some way mentally diseased. The term insanity must here be loosely used of course because of our limited knowledge of the symptoms. Psychoneurotic behavior undoubtedly occurred in these early days although it did not receive the same recognition of abnormality that the psychoses received. In the perfervid excitement of their ceremonies hysteria developed. The bacchanalian and other orgies, while in part attributable to drug effects, must also have included hysterical phenomena. Feeble-mindedness was also known to the ancients. It is, however, of first importance to observe that where these conditions were recognized as abnormal they were looked upon as being in some fashion attributable to supernatural influence.

While a relationship of mental disease to bodily conditions was not in popular thought, there were certain outstanding minds in the great days of Greece who did glimpse this relationship. Plato, in the *Timæus*, recognized the physical basis for certain forms of hysteria as they exist in the female and supposed such to be a disease peculiar to that sex. This notion prevailed for many centuries. But the most illustrious man of the time in the interpretation of disease was the great physician Hippocrates. He was born in 460 B.C., but the date of his death is uncertain, although he seems to have lived to a very great age. This makes him the contemporary of Socrates and, although much older, in part a contemporary of Plato. He had quite evidently been influenced in his studies by the physical philosophies of the time, for he did not resort to the supernatu-

¹ See especially accounts of King Saul in I Samuel 16, 18, 19, 21.

CHAPTER XXI

THE HISTORICAL AND BIOGRAPHICAL BACKGROUND

ANCIENT CONCEPTIONS, HIPPOCRATES, GALEN, BOER-
HAAVE, PINEL, ESQUIROL, MESMER, GALL, GRIESINGER,
KRAFFT-EBING, KRAEPELIN, CHARCOT, BERNHEIM, RIBOT,
JANET, LOMBROSO, JACKSON, FREUD, JUNG, RIVERS.

Abnormal forms of human behavior have existed for a very long time, perhaps they are as old as man himself. The history of abnormal forms of behavior has never been written. If it ever is written, the chances are that the significant feature of such a history will be the presentation of the influence which each period had upon the form and the content of particular disturbances, perhaps also something of their relative frequency. The essential nature of the disturbances themselves seems to be the same wherever and whenever they appear.

Ebbinghaus once said that psychology has had a long past but a comparatively brief history. This is peculiarly true of the psychology of abnormal phenomena. The abnormal has been recognized as long as we know anything of man's observation of his own nature, but the psychology of abnormal phenomena is less than a hundred years old. Some of its founders are still living while the others have but recently died. To evaluate properly the contributions which these men have made depends upon a knowledge of the culture situation in which each worked. So in this chapter will be found a sketch of the history of thought about the abnormal, as well as some items about the more significant names and their contributions.

The ancient Egyptians left records of insanity which they interpreted as demon possession and which they sought to cure by music or mystical formulæ. The old Testament reveals

that the ancient Hebrews had some sad experiences with insanity.¹ They also interpreted such conditions as due to demon possession and used music to quiet or cheer the afflicted. Herodotus describes the instance of an insane king being confined in stocks and eventually committing suicide. The abnormal of mind were not infrequently looked upon as having supernatural sources of knowledge at their command. The soothsayers and sorcerers of old are supposed to have been insane or in some way mentally diseased. The term insanity must here be loosely used of course because of our limited knowledge of the symptoms. Psychoneurotic behavior undoubtedly occurred in these early days although it did not receive the same recognition of abnormality that the psychoses received. In the perfervid excitement of their ceremonies hysteria developed. The bacchanalian and other orgies, while in part attributable to drug effects, must also have included hysterical phenomena. Feeble-mindedness was also known to the ancients. It is, however, of first importance to observe that where these conditions were recognized as abnormal they were looked upon as being in some fashion attributable to supernatural influence.

While a relationship of mental disease to bodily conditions was not in popular thought, there were certain outstanding minds in the great days of Greece who did glimpse this relationship. Plato, in the *Timæus*, recognized the physical basis for certain forms of hysteria as they exist in the female and supposed such to be a disease peculiar to that sex. This notion prevailed for many centuries. But the most illustrious man of the time in the interpretation of disease was the great physician Hippocrates. He was born in 460 B.C., but the date of his death is uncertain, although he seems to have lived to a very great age. This makes him the contemporary of Socrates and, although much older, in part a contemporary of Plato. He had quite evidently been influenced in his studies by the physical philosophies of the time, for he did not resort to the supernatu-

¹ See especially accounts of King Saul in I Samuel 16, 18, 19, 21.

ral in his interpretation of disease. The use of charms and amulets he rejected emphatically. Epilepsy to him was no more divine than any other disease. Although without definite knowledge of the brain and the nervous system, he saw mental disturbances as essentially physical in their causation. For him there were four elements (the warm, the cold, the dry, the moist) and four bodily humors (black bile, yellow bile, blood and phlegm). Of these the body was composed and in terms of these he phrased his pathology. A disease was a disproportion in the elements and humors. Treatment was to bring about the normal proportion. This humoral pathology of Hippocrates lived on until the seventeenth century at least.¹ He recognized mania, melancholia and dementia (by which he designated mental weakness) as clinical entities and also glimpsed something of the influence in mental disease of an abnormality of temperament. He was above all a clinician, interested in the careful observation of symptoms and their relationship. His clinical descriptions are excellent and for our purposes it is of interest to know that he did not omit to mention the mental condition of his patients. Had the independence of mind and the inclination to inductive study of Hippocrates been followed there might have been a vastly greater development of abnormal psychology today; but the trend of medical thought for centuries thereafter was not in the direction of independence and induction but quite the contrary.

The other outstanding physician of the early Mediterranean world was Galen (130 ca-200 ca A.D.). He studied in Alexandria and lived in various places including a considerable period in Rome. He was physician to the famous Marcus Aurelius. He wrote extensively on a great variety of subjects and holds as prominent a place in the history of logic perhaps as he does in medicine. While he was on the whole an imitator of Hippocrates, his writings on medicinal subjects being replete with dogmatic expositions of the humoral theory of Hippocrates, he did

¹ See Burton's *Anatomy of Melancholy*.

make one differentiation which seems to have escaped Hippocrates. Galen differentiated fever delirium from actual insanity. But this is no great progress toward a psychology of the abnormal.

From Galen to modern times the story is but an aspect of the familiar story of science in general through that long period. Christian theology developed a conception of mental life which divorced it from any significant dependence upon the body. Mental diseases were inevitably thought of as having a supernatural source. The belief in demon possession was widespread. The mentally sick, when recognized as such, were assumed to be a problem for the clergy. Miraculous cures were sought. Phenomena which we would today recognize as abnormal were then looked upon as inspired. The extravagances of the children's crusade and the several outbreaks of flagellant excitement may be taken as examples, along with the dancing mania (tarantism) and the messianic crazes among the Jews. Such behavior was far from being always associated with religion. The Mississippi Company panic in France, the tulip craze in Holland and the South Sea Bubble in England are everywhere used by social psychologists as examples of irrational crowd behavior. There was no knowledge either of medicine or psychology which could serve as a deterrent. The revival of learning brought a revival of the study of Aristotle and in medicine a revival of Hippocrates and of Galen. The development of anatomy, physics, and chemistry came slowly but in advance of medicine. It is difficult for us today to comprehend a medical practice based upon other than an extensive knowledge of anatomy, physiology, chemistry and the other tributary sciences, but such was the medicine of the sixteenth and seventeenth centuries. And as for a study of mental diseases, there was no such thing. The insane, if cared for at all, were treated as worse than criminals. They were chained together and to pillars in filthy buildings, supervised by brutes who abused them as a matter of course. In both

England and France it was not uncommon on holidays to admit visitors for a fee to the privilege of seeing the insane in their chains and dirt and filth.

The eighteenth century brought the dawn of a new day. The extremes of Cartesian dualism were passing. A positivistic inductive trend was clearly coming. Sensationalism was spreading in France. The discoveries of the circulation of the blood and the law of gravitation and other advances in physics and physiology and chemistry were having their effect. The associationistic psychology of Hartley shows clearly the evidence of the advance in the physical sciences. Governmental systems were being called in question for the sake of the individual man. The notions of liberty, fraternity, equality, were abroad. The long enslavement of the middle ages to ancient ways of thinking and doing was at long last being thrown off by the rising tide of new knowledge and a new interest in humanity. It would have been strange indeed if such a movement was not discoverable as well in medicine and in the attitude toward the insane. The medical developments of the period are in part significant, as they sketch the circumstances in which both modern psychiatry and psychopathology were born.

There appeared in Leiden a great personality who was also a great teacher and a physician. He was Hermann Boerhaave (1668-1738). It can scarcely be said that he made any great specific addition to medical knowledge. His fame rests upon his genius as a teacher and much has been recorded of the charm of his personality. The medicine which he taught was decidedly Hippocratic. One writer says that he "hashed up" all medical knowledge at that time available. That he emphasized the importance of utilizing the contributions of chemistry sounds strangely obvious to our ears, but it was novel in his day. His fame spread, pupils came to him from all over Europe, and his writings were long used as texts. One of Boerhaave's most promising pupils, whom he himself had selected to be his own successor, was Gerhard Van Swieten (1700-1772). But after

Boerhaave's death local quarrels prevented the appointment of Van Swieten. He was called to Vienna, to which place he carried the center of medical education. He reorganized medical teaching in Vienna after the fashion of Boerhaave and as a consequence Vienna became as famous as Leiden had formerly been. As historical guideposts it is also well to recall that it was in the latter part of this same century that Lavoisier discovered the nature of respiration, and that very late in the century Edward Jenner achieved the art of vaccination against smallpox. Medical knowledge and medical education were beginning to progress.

The spirit of humanity and the appetite for scientific investigation were active and spreading. The attack on the problems of mental disease was bound to come sooner or later, but unfortunately it came somewhat later. In Germany philosophy and religious scruples long delayed the attack on brain pathology and mental disease. Everywhere it was safer to study any other form of physiology or pathology than that which might in any way be interpreted as dangerously materialistic. Two attention-compelling events served to open the way to a new view of mental disease in England and France, although to France goes the honor of giving birth to the scientific study of insanity as a diseased condition.

As every student will recall, George III of England became hopelessly insane. As he was the king, he was quite naturally not thrown into Bedlam; and, as medical knowledge was rapidly progressing, every effort was made to effect a cure. While it must not be supposed that the insanity of George III was the immediate cause of the study of insanity and the improvement of the care of the insane, his was such a conspicuous case as to add great impetus to a movement already rising out of the general growth of knowledge and interest in human welfare. Officials promptly interested themselves in the care of the insane. Reform followed reform, and new institutions were established on a humanitarian basis.

In France it was the Revolution which gave vent to a vast amount of human daring and produced so many changes. It also gave birth to genius. In the person of Philippe Pinel (1745-1826) France produced the genius bold enough and courageous enough to found new branches both of science and of medicine and in a field where for countless centuries man had maintained the no-trespassing sign. Pinel had been appointed physician in charge of the inmates of the Bicêtre (1792), where madmen were chained and kept in rags and filth. To him they were a medical problem which could not be solved by the continuation of abusive methods designed rather to aggravate than to alleviate. But he could not release them without permission of the authorities of the Revolution, and medical men under the Revolution did not receive special consideration. Lavoisier was beheaded. Pinel bravely faced the situation and, in spite of threats if he failed, used the authority which he obtained to remove the chains and to proceed to saner methods in the treatment of insanity. Later he did the same at the Salpêtrière. In 1801 he published a treatise on mental alienation. He recognized the necessity of changing the environment of the mentally diseased as a step in their therapy. He was interested in their inner life and sought to trace out the causation of their troubles. Such an attitude is of course notably modern. Could he have had followers enough with the same interest the psychology of the abnormal might have grown rapidly. His immediate successor was Jean Étienne Dominique Esquirol (1772-1840). He had been assistant to Pinel at the Salpêtrière and succeeded him in 1811. Later (1826) he became chief physician of the asylum at Charenton.

To such men, the task calling for immediate attention was the improvement of the care of the insane. The achievement of this left little time for scientific research. Esquirol ably attacked his problem, traveled extensively through France investigating and reporting and recommending. He is said to have delivered in 1817 the first course of lectures ever given on

insanity and to have repeated the course frequently thereafter. These lectures attracted much attention and were attended by physicians from many countries. The names of Pinel and Esquirol will live rather for their promotion of better care for the insane, a very great contribution in itself, than for their specific contributions to psychopathology. They did the inevitably necessary foundation work. Without it psychopathology would have been yet longer delayed.

Before turning to those who made modern psychiatry and abnormal psychology, it is well to pause for the consideration of two men better known to students of psychology, who were contemporaries of Pinel and Jenner and Lavoisier and who were in different directions products of the same spirit. One of these is Franz Anton Mesmer (1733-1815). He was a student in that Vienna medical school which Van Swieten reorganized and made famous for its progressive spirit and was there during the régime of Van Swieten. In those days each candidate for graduation was required to prepare a thesis. Mesmer prepared one on the influence of the planets upon man, a subject not nearly so absurd then as it appears to us today. Later he experimented with electromagnetism, finding some highly satisfactory therapeutic effects. Then he learned that the same effects could be obtained without the magnets and conceived the notion of animal magnetism. Whether or not Mesmer subsequently resorted to charlatanry, a question hard to answer today, his early work deserves commendation for its spirit of inquiry; and to the student of history it is of interest because on the one hand it links the history of abnormal psychology to Van Swieten and the influence of Boerhaave and on the other to developments which eventuated in our contemporary psychoanalysis. Mesmer went to Paris in 1778 seeking recognition in that center of all scholarship of the time. The next year (1779) he published his volume detailing the discovery of animal magnetism. With the advent of the French Revolution he dropped out of sight and died rather obscurely in Switzer-

land. The rest of his story belongs to the discussion of hypnotism.

Another product of that Vienna school of medicine and medical investigation was Franz Joseph Gall (1758-1828), the founder of phrenology. To dismiss Gall with a gesture of scorn because of the pseudoscientific absurdities of modern side-show performers is to do him a great injustice. Gall's work was a brilliant attempt to bring together, to integrate, the then available psychological and anatomical knowledge. From Locke and Condillac and Cabanis he obtained a sensationalistic point of view. The faculty psychology of von Wolf was the current psychology of the day. Knowledge of nerve and brain anatomy was growing, and Gall himself had dissected many brains. Thinking of mind as composed of a number of faculties each utilizing the material from sense experience, it required but the utilization of the available knowledge of the brain and organ physiology to reach the conclusion that the brain was a congeries of organs, provided the thinker was convinced of the intimate relationship between the psychic and the physical. Of such a conviction the extensive investigations of skulls and the writings of Gall give evidence. Gall's work was a signboard pointing in a productive direction even though his followers ended in a swamp. Beginning about 1796 Gall gave a private course of lectures on phrenology. These aroused opposition on the ground that such a viewpoint was a menace to religion. He went to Paris (1807), like so many others, seeking recognition and approval, but the French Academy reported unfavorably on his work. Nevertheless, he achieved no little popularity for his ideas. Between the years 1810-1819 he published his researches and speculations in four volumes. Two of these were prepared in collaboration with G. Spurzheim, a name now known almost as well as that of Gall in the literature of phrenology. Interest in the work of Mesmer and of Gall lingered and spread through many years. Not infrequently the two were brought together. There are reports of

experimental attempts to prove the truth of the Gall-Spurzheim localizations by pressing on those portions of the skull when the subject was in the hypnotic state.

The student must keep in mind that a chapter so brief as this cannot mention all the names of those who contributed in any way to the development of psychiatry and of the psychology of the abnormal. It can mention only certain of the more significant. It must furthermore be kept constantly in mind that these are always representative of movements in which many men participated. While the attack on mental diseases in Germany had been delayed, when they did undertake the problems involved they created modern psychiatry. The names of Griesinger, Krafft-Ebing and Kraepelin may be taken as most illustrative of this field of development because of their contributions and widespread influence. Wilhelm Griesinger (1817-1868) published in 1845 a text on the pathology and treatment of mental disorders which shaped the thinking of many. He was a physician, thoroughly somatic in his viewpoint, who saw mental disease symptoms as the manifestations of some morbidity of the nervous system. With such a viewpoint it was natural that he should stress the importance of clinical study of mental diseases quite as other diseases were studied. His clear clinical pictures were long famous. Through his teaching at Tübingen and Berlin, as well as through his textbook, he did much for the development of psychopathology and to make psychiatry scientific. Richard von Krafft-Ebing comes nearer to our own time (1840-1902). He was for a brief period a pupil of Griesinger. He taught at Strassburg, at Graz and at Vienna. The first edition of his textbook of insanity, which was destined to become very widely known, appeared in 1879. But his more conspicuous contribution was rather in the field of forensic psychiatry. His work on this subject, published in 1875, is said to have accomplished in its field what Griesinger had earlier accomplished in the purely clinical fields. Krafft-Ebing was never satisfied with a

mere diagnosis for the purpose of classification but stressed the importance of etiology, of case histories, and devoted much time to the minute study of changes in physiological and mental conditions. If examined today his text has a very modern and familiar appearance. In his later years he became much interested in the problems of sex aberration, of inversion and perversion, to the literature of which he made valuable contributions. Hysteria attracted his attention. On this and on epilepsy he also made valuable contributions. He expanded the study of symptoms and clinical pictures into elaborate case histories; he recognized the importance of sex problems and later studied hysteria. This direction of Krafft-Ebing's development was the general direction of the developing psychopathology and is indicative of the developments to follow.

The name of Emil Kraepelin (1856-1926) is perhaps the most illustrious in contemporary psychiatry. His life was a long one and his contributions many. Through his writings, and through American students returning from his lecture room and his clinics, he has had an extensive influence in the United States. He taught at Dorpat and at Heidelberg, and after 1903 at Munich. In his early years he was much influenced by Wilhelm Wundt, sometimes termed the father of experimental psychology. This influence is evident in his earlier writings especially and in his development of experimental psychiatry. His studies of fatigue in the work curve and of alcohol effects are known to all students of psychology. He was decidedly an experimentalist, which is indicative of a new tendency in the study of the insane. His textbook of psychiatry has passed through many editions and revisions and has been the most influential single production of modern times in psychiatry. In the sixth edition published in 1899 he introduced notable revisions in the scheme of classification. He established manic-depressive insanity and dementia præcox as clinical entities and they have remained such up to the present time. The reader of Kraepelin and the observer of his

influence will be attracted by his emphasis not only upon etiology but especially upon the course and the outcome of mental disease. It is for this emphasis upon course and outcome that he has been much praised. Current schemes of classification still show much influence of Kraepelin's work.

On the whole the great development in Germany in the study of mental abnormalities, until very recently, has been in the direction of clinical observation and the development of psychiatry proper rather than in the form of a definite attack on the psychological problems involved. They have sought etiology, course, outcome, symptom groups, systems of classification. And in this way they have made great progress. While the earlier work of Kraepelin showed the influence of Wundt, it was an influence of psychology when psychology was still little more than a recent offshoot from physiology. For the real beginnings of a psychology of abnormal behavior, especially of the psychoneuroses, one must turn back to France, and back to the middle of the last century.

Jean Martin Charcot (1825-1893) became physician at the Salpêtrière in 1862 and under his enthusiastic leadership developed one of the greatest neurological clinics of all time. The names of Charcot and of the Salpêtrière are scattered broadcast throughout the literature not only of psychiatry and neuropathology but also through the literature of abnormal psychology. He published his lectures in five volumes from 1872 to 1893. For the student of psychology to understand the work of Charcot it is well to observe certain of his habits of mind. He was not exclusively a neurologist, for he made many excellent contributions in other fields of medicine. In neurology he is famous for his excellent presentation of the trophic disturbances which are consequent to spinal and cerebral disorders. He did much work especially on locomotor ataxia. He was a purely objective experimenter; and, although incidentally contributing to the development of psychology, apparently had little patience himself with psychological work.

Hysterics of course in large numbers came to such a clinic as his and he was much interested in hysteria; but it was in the hysterical seizure itself that he was interested. He is said to have had little faith in the questioning of the patient and did so only in a distant or impatient manner. While Charcot seems to have recognized the psychogenic origin of hysterical seizures, it was not upon the psychogenesis that he concentrated but upon the neuromuscular manifestations of the seizures. So, he presented hysteria as a neurotic condition with a typical program or course of symptoms. When hypnotic phenomena were brought in for study he interpreted them also in this neurological fashion as due to a neurotic condition. As has already been pointed out¹ the great controversy between Charcot and Bernheim over this interpretation of hypnotism ended for the time being in a victory for Bernheim which still stands in the thought of many; but there is clearly evident a trend back to the essential nature of Charcot's contention, cleared now of course of the débris of that controversy.

In order to follow the developments in France, it is necessary to recall to mind the excitement over mesmerism or animal magnetism. The French Revolution had driven Mesmer out and had distracted the minds of thinking people, but the influence of Mesmer was not dead. In both France and England the laity and an occasional physician more daring than others played with, or experimented with, animal magnetism. Little societies were formed for its cultivation, but it lacked professional recognition and hence respectability. On the whole it was condemned as a fraud. In England the attention of James Braid (1795-1861) was attracted to it and he is now looked upon as the pioneer in the scientific study of what since his time has been termed hypnotism, a term which he is usually accredited with having coined. He was of Scottish birth but living in Manchester. He saw his first demonstration of hypnotism in 1841. A little experimentation soon convinced him

¹ See chapter on hypnotism.

that it was not a fraud but that he had before him a peculiar mental state worthy of further investigation, and he proceeded to prove what others before him had believed to be true — that it was a subjective or psychological phenomenon. In 1843 he published his *Neurypnology, or the Rationale of Nervous Sleep*. Still the medical world was not convinced, and a physician's reputation was endangered by the mere suggestion of belief in hypnotism. Braid, however, was not alone in his experimentation and in his courage. John Elliotson (1791-1868), a professor in the University of London, was attracted by the possibilities of producing anesthesia in the hypnotic state and its surgical uses. If not the very first he was certainly one of the first to perform surgical operations under hypnotic anesthesia. His medical colleagues did not take kindly to such heresy and the consequence to Elliotson was not happy. Another name to be recalled in this connection is that of James Esdaille (1808-1859), who while living in India performed surgical operations on Hindus under hypnotic anesthesia to the number of over two hundred and fifty. He published a report of this work in 1846 (*Mesmerism in India*). Unfortunately, after his return to England he was not so successful.

Some French physicians learned of the work of these Englishmen and tried the same thing themselves. Apparently their success was not great for some reason and they generally concluded that hypnotism was of slight value. But among them was one Ambroise Auguste Liébeault (1823-1904), who was apparently more successful than the rest. He lived in Nancy and continued to use hypnosis quite unostentatiously in his large practice for many years. He, too, recognized the subjective nature of the phenomenon and knew the importance of expectation and the play of suggestion. In the university of Nancy there was a professor of medicine, Hippolyte Marie Bernheim (1840-1919), who had been reading Charcot's descriptions of hypnotism and his interpretation. He tried to reproduce the phenomena experienced at the Salpêtrière and

failed. Hearing of the work of Dr. Liébeault, he went to him somewhat skeptically but frankly seeking information. He saw Liébeault's methods and observed his success. The therapeutic and anesthetic possibilities appealed to him. He continued his attempts until he, too, could hypnotize his patients in the manner of Liébeault. The publications of Bernheim brought rejoinders from Charcot and his associates. This developed into an active and often too intense controversy. Bernheim contended that hypnotism was an artificially induced sleep, that there were no morbid conditions, that all the phenomena were caused by suggestion. This discussion, whatever one may think of the outcome, did attract attention to the psychological aspects of hypnotism, and of course of hysteria as well. Following this lead, other Frenchmen elaborated these psychological aspects and among these must be mentioned first of all Ribot.

Théodule Armand Ribot (1839-1916) was a pupil of Charcot and although a psychologist differing from Charcot in many ways he seems to have retained the constant respect of his teacher. Ribot was called to the Sorbonne as a lecturer on experimental psychology in 1885 and then to the College de France in 1889. His interest in the abnormal began early. Eugene Azam (1822-1899) of Bordeaux had reported the curious case of a girl who manifested a great variety of hysterical phenomena. This had attracted the attention of Taine, who included in his book on intelligence a considerable recognition of abnormal behavior. Ribot, stimulated by both Azam and Taine, brought his psychological knowledge to bear on the subject, which resulted in the now well-known volume on the *Diseases of Memory* (1881). Prior to that time Ribot had published surveys of the status of psychology in both England and Germany which revealed a catholicity of mind as well as critical powers. This bent for the abnormal continued and in 1883 he published a volume on the *Diseases of the Will* and in 1885 another on the *Diseases of Personality*. These stimulated much

study of the psychoneuroses and are well worth reading even today. In Ribot one will find the influence of evolutionary thought everywhere in evidence. The notion of degeneration had been introduced into psychiatry by B. A. Morel in 1857. Herbert Spencer and Hughlings Jackson in England had stressed the evolutionary attitude in neurological and psychological interpretation. Following the lead of these, Ribot makes much use of evolution and degeneration in his interpretations of memory, will and personality. He is interested in tendencies and dispositions and their influence, in integration and disintegration. His recognition of the importance of sentiments and emotions makes of his work a foregleam of the large place which these factors were to have in the analyses of later years. His *Psychology of the Emotions*, first published in 1896, includes a creditable consideration of abnormal emotional behavior.

The last of the French group which can be mentioned here is Pierre Janet, whose many contributions are frequently referred to in other chapters of this book. He was born in 1859 and has long been a professor at the College de France. At the opening of the new Harvard medical school in the fall of 1906 he visited this country and delivered a valuable series of lectures on the *Major Symptoms of Hysteria* which were published the following year. Later on he published in two large volumes a study of *Psychological Healing* systems in which there are many historical summaries of great value. Both Janet and Freud studied with Charcot and both show his influence. The differences between the interpretations of the two men are elsewhere presented and it is for time to evaluate the contributions of the two. But whatever be the place their systems eventually find in history the great contribution which Janet has made through his painstaking presentation of the psychological features of hysterical cases can never be forgotten; and the stimulus which his work has been to the study of abnormal behavior will have its effect long after he has gone.

The concept of evolution, with its attendant notions of degeneration and reversion, has already been mentioned but it must be further considered because it is to the influence of the evolutionary or genetic point of view that much of the most recent developments in abnormal psychology must be attributed. It has already been mentioned that Morel introduced the notion of degeneration and it will be recalled by many that this was the basis for the subsequent extravagances of Lombroso and Nordau. Cesare Lombroso (1836-1909), an Italian anthropologist, sought to explain criminal behavior as atavistic and founded a school of criminology in terms of types which modern criminologists have had difficulty in displacing. Max Nordau (1849-1923) applied the degeneration theory to the interpretation of genius, an application which has enjoyed an unfortunate popularity. In England evolutionary thinking, especially in its phylogenetic aspects, appeared prominently in the contributions of Hughlings Jackson (1834-1911). Jackson never compiled his interpretations in a single volume, but in a long and valued series of papers he contended that the same fundamental principles could be applied to all nervous diseases, from minor paralysis up to and including insanity.¹ His thinking on the relationship between mind and body was strictly parallelistic. His functional division of the central nervous system into three levels, beginning with the reflex or spinal cord level and ending with the purely cerebral or associational, reflects his phylogenetic thinking. Degeneration and disintegration reversed the course of development and integration.

But it is in the psychology of the psychoanalysts that the evolutionary viewpoint reaches its most elaborate development for the interpretation of abnormal behavior. The details of

¹ Many of Jackson's papers have recently been brought together and republished. See Taylor, J., Holmes, G. and Walshe, F. M. R. (Eds.), Vol. I, *On Epilepsy and Epileptiform Convulsions*; Vol. II, *Evolution and Dissolution of the Nervous System, Speech, Various Papers*. London, Hodder, 1931-32.

these interpretations are presented in other chapters, but it will be instructive here to glance at the historical setting and at some of the vicissitudes through which it has passed. As all the world knows, its founder was Sigmund Freud (1856-), whose long life and numerous stimulatingly original publications have had a pervasive influence. Freud was trained in medicine at the University of Vienna and was first interested in neurological research to which he made some commendable contributions. But his is a creative pioneering temperament of the sort which is certain to be dissatisfied with the routine of the research laboratory. The fame of Charcot attracted him and he went to Paris, to the Salpêtrière, to study in its famous clinic during the winter of 1885-1886. Three years later he spent some time with Bernheim in Nancy. So the historically minded can trace a long and fascinating line of influence from Boerhaave through Van Swieten and Mesmer and Bernheim and Charcot to Freud and the psychoanalytic movement. Freud was stimulated by Charcot and Bernheim but convinced by neither except in the belief in a psychogenic basis for hysterical phenomena. This he followed out in great detail and it is to this interplay of emotion and interpretation and habit, leading far back into the childhood of the individual and of the race, that the psychoanalyst finds the psychogenesis of psychoneurotic behavior. The striking similarity between Freud's concepts of conflict and censorship and repression and the psychology of Herbart has been often mentioned. In Freud's student and early productive years, experimental psychology had not progressed far enough to contribute much to the problems he sought to solve, and Herbartian psychology was widely influential in educational theory; so it may easily be that Freud was influenced by Herbartianism. But this must not blind one to the essentially evolutionary nature of Freud's thinking. Freud's first significant work, *Studien über Hysterie*, was prepared in collaboration with an early friend, Joseph Breuer, to whom Freud generously gives much credit, and was

published in 1895. The famous volume on the *Interpretation of Dreams* appeared in 1900 and the *Three Contributions to Sexual Theory*, which many critics think one of his most significant works, in 1905. These dates can be conveniently used as milestones in the course of psychoanalytic progress. Of the later publications, *Beyond the Pleasure Principle* (1920) and *The Ego and The Id* (1923) deserve special mention because in them Freud reveals some significant doubts and makes some important changes in his general theory.

Freud organized in Vienna in 1903 a little circle for the study and advancement of psychoanalysis. This was the founding of the Viennese Psychoanalytic Society. The original group was composed of Freud himself and Wilhelm Stekel, Alfred Adler, Max Kahane, and Rudolf Reitler. Within a short time the number was enlarged by the addition of Edouard Hitschmann, Isidor Sadger, Otto Rank, and others. Stekel has become famous for his brilliant analyses of character traits. Adler founded a branch movement of great importance which placed first emphasis upon organic inferiority and inferiority feelings. In Switzerland there was a group (Bleuler, Jung, Abraham and others) who early became interested in the Freudian method of study and interpretation, and have continued to make valuable contributions to its progress, although practically disowned by Freud today. In 1908 there was a convention held at Salzburg, known as the First Psychoanalytical Congress, which seems to have been a very happy occasion. Upon the invitation of G. Stanley Hall and the trustees of Clark University, both Freud and Jung came to the United States for a conference at Worcester, Massachusetts, in the fall of 1909. Many American psychologists and psychiatrists were there to hear them. That conference gave a great impetus to the spread of psychoanalysis in this country. After the return from that journey the relationship between Freud and Jung became more and more strained until eventually it was broken completely. There has been a similar break with Adler. Re-

grettable as are these personal differences they cannot be entirely ignored because they have undoubtedly had a significant influence upon the progress of psychoanalysis.

C. G. Jung (1875-) of Zurich has been more inclined than Freud to the adaptation of systematic methods of inductive research to his problems. It is to this that we are indebted especially for his valuable volume on the association method for the discovery of complexes. Of recent years Jung has been more interested in the phylogenetic aspects of psychoanalytic interpretation and in the application of these to personality differences.

The psychoanalytic movement has provoked a vast amount of research and has contributed most valuable concepts for interpretative purposes. It has thrown emphasis upon a psychological point of view which may well be termed dynamic. This view is spreading rapidly and the researches accompanying its spread seem likely to produce many changes in the interpretation of abnormal behavior. Typical of the influence is that visible in the work of W. H. R. Rivers (1864-1922), English physician-anthropologist-psychologist, who, although in his early days a pupil for a time of Kraepelin, recognized in his later years the interpretative value of psychoanalytic thought. He did not, however, accept the psychoanalytic theory in detail but rather the general attitude and method. Others manifest a similar reaction.

The first excitement of psychoanalytic thinking appears to have past. A healthy critical reaction is under way which gives promise of conserving the values contributed by psychoanalysis and of developing them in harmony with the contributions of experimental psychology and psychopathology. The techniques, statistical and experimental, of both general and genetic psychology are being applied to the problems of abnormal development and behavior. Clinical data are being gathered in ever increasing quantities by methods that make comparisons and control studies possible. The trend is very

definitely in the direction of a science of abnormal psychology. The era of armchair speculation about the abnormal in human nature and the days of generalization from a few casually collected clinical cases are certainly passing. And few there are who regret to see them go, fruitful as have been many of the suggestions and insights made by great minds working with those very methods which are now fast being abandoned.

SELECTED REFERENCES

- Broadbent, Wm., "Hughlings Jackson as a pioneer in nervous physiology and pathology," *Brain*, 1903, 26, 305-366.
- Bunker, H. A., Jr., "Psychiatric etymology," *Amer. J. Psychiat.*, 1927, 7, 37-76.
- Freud, Sigmund, *The History of the Psychoanalytic Movement*. Nerv. & Ment. Dis. Monog., No. 25, 1917. Pp. 58.
- Garrison, F. H., *An Introduction to the History of Medicine*. Phila., Saunders, 1921. Pp. 942.
- Gorton, D. A., *The History of Medicine*. New York, Putnam, 1920. 2 vols.
- Hall, G. W., "Neurologic signs and their discoverers," *J. Amer. Med. Asso.*, 1930, 95, 703-707.
- Hills, F. L., "Psychiatry—ancient, medieval and modern," *Pop. Sci. Mo.*, 1901, 60, 31-48.
- Janet, Pierre, *Psychological Healing*. New York, Macmillan, 1926. 2 vols.
- Jelliffe, S. E., "Notes on the history of psychiatry," *Alienist & Neur.*, 1910, 1911, 1912, 1916, 1917.
- Lenoir, R., "The psychology of Ribot and contemporary thought," *Monist*, 1920, 30, 365-394.
- May, J. V., *Mental Diseases*. Boston, Badger, 1922. Pp. 544.
- Meyer, Adolph, "A few trends in modern psychiatry," *Psychol. Bull.*, 1904, 1, 217-240.
- Myers, C. S., "The influence of the late W. H. R. Rivers on the development of psychology in Great Britain," *Nature*, 1922, 110, 485-490.
- Oliver, J. R., "The psychiatry of Hippocrates. A plea for the study of the history of medicine," *Amer. J. Psychiat.*, 1925, 5, 107-115.
- Tuke, D. Hack (Ed.), *Dictionary of Psychological Medicine*. London, Churchill, 1892. 2 vols.
- Wittels, Fritz, *Sigmund Freud*. New York, Dodd, 1924. Pp. 287.

INDEX

A

- Abbott, D. P., 492
- Abnormal, definition of, 2
- Abnormal distinguished from normal, 178
- Abreaction, 421
- Acute hallucinosis, 430
- Adie, W. J., 315, 317
- Adler, Alfred, 38, 52, 145, 512
- Adjustment, definition of, 8
- Agoraphobia, 99
- Alcohol, 427
 - alteration of traits by, 432
 - extraverting effect of, 435
 - why used, 433
- Allan, S. M., 217
- Allochiria, 65
- Ambiversion, 26
- Amentia, 190, 243
- Amnesia, anterograde, 81
 - complete, 85
 - continuous, 81
 - dissociative or systematic, 86
 - epileptic, 215
 - paramnesia, 87
 - retroactive, 83
- Amputation effects, 59
- Anderson, J. E., 296, 311, 317
- Anesthesia, 54, 122
- Anesthetic drugs, 448
- Anxiety states, 113, 131
- Aphasia, 93, 94
- Apparitions, 475, 480
- Appel, K. E., 324
- Armstrong-Jones, R., 451
- Aronovitch, B., 289
- Arteriosclerosis, 211
- Association,
 - arbitrary stimuli, 407
 - free, 406
 - isolation of personality types by, 414
 - Jung-Eder word list, 409
 - Kent-Rosanoff method, 414
 - Woodrow-Lowell study, 415

- Astereognosis, 65
- Asthenic type, 22
- Athetosis, 256
- Athletic type, 23
- Autistic personality, 21
- Autistic thinking, 50
- Automatic writing, 417, 466
- Autonomic system, 7
- Aveling, F., 348
- Azam, Eugene, 508

B

- Babcock, H., 199
- Babinski, J., 145, 362
- Bagby, English, 145, 389, 399
- Bailey, P., 7, 138
- Barker, Elsa, 466
- Barnard, R. H., 162, 173
- Barnes, H. E., 283
- Barr, M. W., 284
- Baskerville, Charles, 333
- Bass, M. J., 343, 350
- Bates, R. L., 437, 450
- Beauchamp case, 150
- Beers, C. W., 67, 241
- Behan, R. J., 78
- Bell adjustment inventory, 404
- Bellamy, R., 376, 392
- Benedict, F. G., 427, 449
- Bennet, E. A., 119
- Bentley, M., 28, 399
- Bernheim, H., 362, 507
- Bernreuter personality inventory, 404
- Berrien, F. K., 364, 399
- Berry, Elmer, 450
- Best, H., 78
- Binet, A., 71, 78, 159, 325, 362
- Birth lesion and feeble-mindedness, 256
- Blanchard, E., 203
- Blanchard, P., 366, 379, 391, 399
- Blankenhorn, M. A., 290
- Bleuler, Eugen, 187, 205, 212
- Bleuler, M., 204

definitely in the direction of a science of abnormal psychology. The era of armchair speculation about the abnormal in human nature and the days of generalization from a few casually collected clinical cases are certainly passing. And few there are who regret to see them go, fruitful as have been many of the suggestions and insights made by great minds working with those very methods which are now fast being abandoned.

SELECTED REFERENCES

- Broadbent, Wm., "Hughlings Jackson as a pioneer in nervous physiology and pathology," *Brain*, 1903, 26, 305-366.
- Bunker, H. A., Jr., "Psychiatric etymology," *Amer. J. Psychiat.*, 1927, 7, 37-76.
- Freud, Sigmund, *The History of the Psychoanalytic Movement*. Nerv. & Ment. Dis. Monog., No. 25, 1917. Pp. 58.
- Garrison, F. H., *An Introduction to the History of Medicine*. Phila., Saunders, 1921. Pp. 942.
- Gorton, D. A., *The History of Medicine*. New York, Putnam, 1920. 2 vols.
- Hall, G. W., "Neurologic signs and their discoverers," *J. Amer. Med. Asso.*, 1930, 95, 703-707.
- Hills, F. L., "Psychiatry—ancient, medieval and modern," *Pop. Sci. Mo.*, 1901, 60, 31-48.
- Janet, Pierre, *Psychological Healing*. New York, Macmillan, 1926. 2 vols.
- Jelliffe, S. E., "Notes on the history of psychiatry," *Alienist & Neur.*, 1910, 1911, 1912, 1916, 1917.
- Lenoir, R., "The psychology of Ribot and contemporary thought," *Monist*, 1920, 30, 365-394.
- May, J. V., *Mental Diseases*. Boston, Badger, 1922. Pp. 544.
- Meyer, Adolph, "A few trends in modern psychiatry," *Psychol. Bull.*, 1904, 1, 217-240.
- Myers, C. S., "The influence of the late W. H. R. Rivers on the development of psychology in Great Britain," *Nature*, 1922, 110, 485-490.
- Oliver, J. R., "The psychiatry of Hippocrates. A plea for the study of the history of medicine," *Amer. J. Psychiat.*, 1925, 5, 107-115.
- Tuke, D. Hack (Ed.), *Dictionary of Psychological Medicine*. London, Churchill, 1892. 2 vols.
- Wittels, Fritz, *Sigmund Freud*. New York, Dodd, 1924. Pp. 287.

INDEX

A

Abbott, D. P., 492
 Abnormal, definition of, 2
 Abnormal distinguished from normal, 178
 Abreaction, 421
 Acute hallucinosis, 430
 Adie, W. J., 315, 317
 Adler, Alfred, 38, 52, 145, 512
 Adjustment, definition of, 8
 Agoraphobia, 99
 Alcohol, 427
 alteration of traits by, 432
 extraverting effect of, 435
 why used, 433
 Allan, S. M., 217
 Allochiria, 65
 Ambiversion, 26
 Amentia, 190, 243
 Amnesia, anterograde, 81
 complete, 85
 continuous, 81
 dissociative or systematic, 86
 epileptic, 215
 paramnesia, 87
 retroactive, 83
 Amputation effects, 59
 Anderson, J. E., 296, 311, 317
 Anesthesia, 54, 122
 Anesthetic drugs, 448
 Anxiety states, 113, 131
 Aphasia, 93, 94
 Apparitions, 475, 480
 Appel, K. E., 324
 Armstrong-Jones, R., 451
 Aronovitch, B., 289
 Arteriosclerosis, 211
 Association,
 arbitrary stimuli, 407
 free, 406
 isolation of personality types by, 414
 Jung-Eder word list, 409
 Kent-Rosanoff method, 414
 Woodrow-Lowell study, 415

Astereognosis, 65
 Asthenic type, 22
 Athetosis, 256
 Athletic type, 23
 Autistic personality, 21
 Autistic thinking, 50
 Automatic writing, 417, 466
 Autonomic system, 7
 Aveling, F., 348
 Azam, Eugene, 508

B

Babcock, H., 199
 Babinski, J., 145, 362
 Bagby, English, 145, 389, 399
 Bailey, P., 7, 138
 Barker, Elsa, 466
 Barnard, R. H., 162, 173
 Barnes, H. E., 283
 Barr, M. W., 284
 Baskerville, Charles, 333
 Bass, M. J., 343, 350
 Bates, R. L., 437, 450
 Beauchamp case, 150
 Beers, C. W., 67, 241
 Behan, R. J., 78
 Bell adjustment inventory, 404
 Bellamy, R., 376, 392
 Benedict, F. G., 427, 449
 Bennet, E. A., 119
 Bentley, M., 28, 399
 Bernheim, H., 362, 507
 Bernreuter personality inventory, 404
 Berrien, F. K., 364, 399
 Berry, Elmer, 450
 Best, H., 78
 Binet, A., 71, 78, 159, 325, 362
 Birth lesion and feeble-mindedness, 256
 Blanchard, E., 203
 Blanchard, P., 366, 379, 391, 399
 Blankenhorn, M. A., 290
 Bleuler, Eugen, 187, 205, 212
 Bleuler, M., 204

- Blindness, 55, 375
 hysterical, 122
 Bloom, W., 436, 442, 450
 Bluemel, C. S., 165, 173
 Boerhaave, Hermann, 498
 Boltz, O. H., 234
 Bond, E. A., 324
 Bond, N. B., 297
 Bourne, Ansel, case of, 155
 Bovarism, 396
 Bowers, A. M., 16, 27, 52, 146
 Bowman, K. M., 201, 241
 Boynton, M. A., 295
 Braid, James, 506
 Brain injuries and feeble-mindedness,
 256
 Brain tumors, 211
 Brainard, H. G., 261, 285
 Bramwell, J. M., 325, 362
 Breuer, Joseph, 511
 Bridges, J. W. and K. M. B., 1, 265
 Brill, A. A., 31, 107, 441, 450
 Broadbent, Wm., 514
 Broddingnagian hallucinations, 68
 Bromberg, W., 324
 Bronner, A. F., 16, 27, 52, 146
 Brontë, Charlotte, 283
 Brousseau, K., 261, 285
 Brown, W., 349
 Browne, C. A., 482
 Brush, C. E., 290
 Brush, E. N., 297
 Brush, N. H., 110
 Bryant, E. C., 482
 Bryant, R. H., 285
 Buchanan, D. N., 451
 Bunker, H. A., Jr., 514
 Burks, B. S., 286
 Burnham, W. H., 83, 88, 96, 145,
 301, 317, 438, 450
- C
- Caffeine, 441
 introverting effect of, 443
 sleep disturbance by, 443
 why used, 444
 Calkins, M. W., 364, 399
 Callender, E. M., 310
 Campbell, C. M., 26
 Campbell, H. E., 290
 Cannon, W. B., 8, 26
 Carrington, Hereward, 469
 Carver, D. J., 437
 Castle, Cora, 280
 Cataplectic seizures, 314
 Catatonia, 196
 Cattell, J. McK., 274, 280, 286
 Censor concept, 14
 Charcot, J. M., 133, 145, 505
 Chase, Jessie M., 286
 Chase, R. E., 442
 Child, C. N., 26
 Chorea, Huntington's, 211
 Church, A., 188
 Ciphers, reading of, in trance states,
 491
 "Circular insanity," 230
 Clairvoyance, 471
 Claparède, E., 301, 317
 Clark, L. P., 215, 223, 225, 254, 283,
 424, 426, 434
 Clark, R. M., 261
 Claustrophobia, 99
 Cleveland, C. C., 356
 Cobb, S., 225
 Cocaine, 444
 Compensation, 40
 Complex, definition of, 31
 formation of, 35
 indicators, 410
 inferiority, 37
 morbid, 34
 Œdipus and Electra, 44
 Compulsive acts, 100
 Condensation, 47, 382
 Conklin, Edmund S., 25, 52, 68, 188
 Constitutional psychopathic inferi-
 ority, 268, 270
 Contractures, hysterical, 123
 Conversion hysteria, 144
 Convulsive seizures, hysterical, 117
 Cook, L. C., 324
 Cooperman, N. R., 295, 442
 Coover, J. E., 473, 475, 493
 Coriat, I. H., 77, 78, 96, 112, 145,
 159, 171, 173, 302, 317, 399, 420
 Cory, C. E., 464, 493
 Cowdrey, E. V., 28
 Cox, Catherine M., 274, 286
 Craig, Katherine T., 399
 Creak, E. M., 315

Cretinism, 260
 Crosland, H. R., 408, 426
 Cross correspondence, 490
 Crush form of love, 43
 Cryptesthesia, 471
 Crystal gazing, 416, 475
 Cubberley, A. J., 366
 Culpin, M., 114
 Cutsforth, T. D., 57, 63, 78
 Cutten, G. B., 401
 Cyclothyme, 20

D

Dallenbach, K. M., 62
 Davenport, F. M., 134, 356
 Davies, A. E., 1
 Davis, R. C., 344, 350
 Davis, T. K., 212, 241
 Day-dreaming, 393
 Dayton, N. A., 255, 257, 259
 Deaf, 55
 dreams of, 375
 defense mechanism, 38
 Definition of abnormal, 2
 DeGruchy, C., 211, 425
 Delirium, 396
 Delirium tremens, 430
 Delusion, 179
 Dementia, definition of, 189
 epileptic, 218
 paralytica (*see* paresis)
 praecoxissima, 199
 praecox (*see* schizophrenia)
 Depression (*see also* manic-depressive psychosis)
 nostalgic, 237
 psychasthenic, 237
 Depth of sleep, 291
 DeSanctis, S., 316
 Devine, Henry, 212, 241
 Diethelm, O., 234
 Diller, T., 146
 Dipsomania, 432
 Displacement, 45, 382
 Dejerine, J., 426
 Dodge, R., 427, 449
 Doll, E. A., 257, 285
 Dooley, Lucile, 283, 286, 425
 Doolittle, G. J., 224
 Doris case, 153
 Dorsey, J. M., 236
 Dowsing, 476, 482
 Dramatization, 383
 Dreams, Chap. XVII
 blindness and, 375
 Bovarrism and, 396
 collective, 373
 condensation in, 382
 content of, 364, 369
 day-dreaming, 393
 deafness and, 375
 delirium, 396
 displacement in, 382
 dramatization in, 383
 experimental stimulation of, 366
 forgetting of, 370
 hallucinatory nature of, 370
 kinesthetic, 373
 latent content of, 381
 manifest content of, 381
 mechanism of dream work, 382
 nightmare, 376
 non-freudian theory, 377
 of the dead, 376
 over-determination in, 384
 paralysis dream, 374
 premonitory, 372
 prodromic, 372
 prophetic, 372
 psychoanalytic theory of, 379
 psychoneuroses and, 398
 psychoses and, 397
 psychotherapy and, 405
 recurrent, 375
 regression in, 387
 secondary elaboration in, 383
 symbols in, 390
 sleep depth and, 364
 speed of thought in, 367
 theories of, 377, 390
 types of, 371
 waking consciousness and, 368
 wish motivation in, 384
 Drives, 36
 Drugs, mental effects of, 427
 sleep and, 316
 Dual personality (*see* multiple personality)
 Dubois, P. H., 200, 210, 316
 Dugdale, R. L., 258
 Dunlap, C. B., 201

- Blindness, 55, 375
 hysterical, 122
 Bloom, W., 436, 442, 450
 Bluemel, C. S., 165, 173
 Boerhaave, Hermann, 498
 Boltz, O. H., 234
 Bond, E. A., 324
 Bond, N. B., 297
 Bourne, Ansel, case of, 155
 Bovarism, 396
 Bowers, A. M., 16, 27, 52, 146
 Bowman, K. M., 201, 241
 Boynton, M. A., 295
 Braid, James, 506
 Brain injuries and feeble-mindedness, 256
 Brain tumors, 211
 Brainard, H. G., 261, 285
 Bramwell, J. M., 325, 362
 Breuer, Joseph, 511
 Bridges, J. W. and K. M. B., 1, 265
 Brill, A. A., 31, 107, 441, 450
 Broadbent, Wm., 514
 Broddingnagian hallucinations, 68
 Bromberg, W., 324
 Bronner, A. F., 16, 27, 52, 146
 Brontë, Charlotte, 283
 Brousseau, K., 261, 285
 Brown, W., 349
 Browne, C. A., 482
 Brush, C. E., 290
 Brush, E. N., 297
 Brush, N. H., 110
 Bryant, E. C., 482
 Bryant, R. H., 285
 Buchanan, D. N., 451
 Bunker, H. A., Jr., 514
 Burks, B. S., 286
 Burnham, W. H., 83, 88, 96, 145, 301, 317, 438, 450
- C
- Caffeine, 441
 introverting effect of, 443
 sleep disturbance by, 443
 why used, 444
 Calkins, M. W., 364, 399
 Callender, E. M., 310
 Campbell, C. M., 26
 Campbell, H. E., 290
 Cannon, W. B., 8, 26
 Carrington, Hereward, 469
 Carver, D. J., 437
 Castle, Cora, 280
 Cataplectic seizures, 314
 Catatonia, 196
 Cattell, J. McK., 274, 280, 286
 Censor concept, 14
 Charcot, J. M., 133, 145, 505
 Chase, Jessie M., 286
 Chase, R. E., 442
 Child, C. N., 26
 Chorea, Huntington's, 211
 Church, A., 188
 Ciphers, reading of, in trance states, 491
 " Circular insanity," 230
 Clairvoyance, 471
 Claparède, E., 301, 317
 Clark, L. P., 215, 223, 225, 254, 283, 424, 426, 434
 Clark, R. M., 261
 Claustrophobia, 99
 Cleveland, C. C., 356
 Cobb, S., 225
 Cocaine, 444
 Compensation, 40
 Complex, definition of, 31
 formation of, 35
 indicators, 410
 inferiority, 37
 morbid, 34
 Œdipus and Electra, 44
 Compulsive acts, 100
 Condensation, 47, 382
 Conklin, Edmund S., 25, 52, 68, 188
 Constitutional psychopathic inferiority, 268, 270
 Contractures, hysterical, 123
 Conversion hysteria, 144
 Convulsive seizures, hysterical, 117
 Cook, L. C., 324
 Cooperman, N. R., 295, 442
 Coover, J. E., 473, 475, 493
 Coriat, I. H., 77, 78, 96, 112, 145, 159, 171, 173, 302, 317, 399, 420
 Cory, C. E., 464, 493
 Cowdrey, E. V., 28
 Cox, Catherine M., 274, 286
 Craig, Katherine T., 399
 Creak, E. M., 315

Cretinism, 260
 Crosland, H. R., 408, 426
 Cross correspondence, 490
 Crush form of love, 43
 Cryptesthesia, 471
 Crystal gazing, 416, 475
 Cubberley, A. J., 366
 Culpin, M., 114
 Cutsforth, T. D., 57, 63, 78
 Cutten, G. B., 401
 Cyclothyme, 20

D

- Dallenbach, K. M., 62
 Davenport, F. M., 134, 356
 Davies, A. E., 1
 Davis, R. C., 344, 350
 Davis, T. K., 212, 241
 Day-dreaming, 393
 Dayton, N. A., 255, 257, 259
 Deaf, 55
 dreams of, 375
 defense mechanism, 38
 Definition of abnormal, 2
 DeGruchy, C., 211, 425
 Delirium, 396
 Delirium tremens, 430
 Delusion, 179
 Dementia, definition of, 189
 epileptic, 218
 paralytica (*see* paresis)
 praecocissima, 199
 praecox (*see* schizophrenia)
 Depression (*see also* manic-depressive psychosis)
 nostalgic, 237
 psychasthenic, 237
 Depth of sleep, 291
 DeSanctis, S., 316
 Devine, Henry, 212, 241
 Diethelm, O., 234
 Diller, T., 146
 Dipsomania, 432
 Displacement, 45, 382
 Dejerine, J., 426
 Dodge, R., 427, 449
 Doll, E. A., 257, 285
 Dooley, Lucile, 283, 286, 425
 Doolittle, G. J., 224
 Doris case, 153
 Dorsey, J. M., 236
 Dowsing, 476, 482
 Dramatization, 383
 Dreams, Chap. XVII
 blindness and, 375
 Bovarium and, 396
 collective, 373
 condensation in, 382
 content of, 364, 369
 day-dreaming, 393
 deafness and, 375
 delirium, 396
 displacement in, 382
 dramatization in, 383
 experimental stimulation of, 366
 forgetting of, 370
 hallucinatory nature of, 370
 kinesthetic, 373
 latent content of, 381
 manifest content of, 381
 mechanism of dream work, 382
 nightmare, 376
 non-freudian theory, 377
 of the dead, 376
 over-determination in, 384
 paralysis dream, 374
 premonitory, 372
 prodromic, 372
 prophetic, 372
 psychoanalytic theory of, 379
 psychoneuroses and, 398
 psychoses and, 397
 psychotherapy and, 405
 recurrent, 375
 regression in, 387
 secondary elaboration in, 383
 symbols in, 390
 sleep depth and, 364
 speed of thought in, 367
 theories of, 377, 390
 types of, 371
 waking consciousness and, 368
 wish motivation in, 384
 Drives, 36
 Drugs, mental effects of, 427
 sleep and, 316
 Dual personality (*see* multiple personality)
 Dubois, P. H., 200, 210, 316
 Dugdale, R. L., 258
 Dunlap, C. B., 201

- Blindness, 55, 375
 hysterical, 122
 Bloom, W., 436, 442, 450
 Bluemel, C. S., 165, 173
 Boerhaave, Hermann, 498
 Boltz, O. H., 234
 Bond, E. A., 324
 Bond, N. B., 297
 Bourne, Ansel, case of, 155
 Bovarism, 396
 Bowers, A. M., 16, 27, 52, 146
 Bowman, K. M., 201, 241
 Boynton, M. A., 295
 Braid, James, 506
 Brain injuries and feeble-mindedness,
 256
 Brain tumors, 211
 Brainard, H. G., 261, 285
 Bramwell, J. M., 325, 362
 Breuer, Joseph, 511
 Bridges, J. W. and K. M. B., 1, 265
 Brill, A. A., 31, 107, 441, 450
 Broadbent, Wm., 514
 Brodingtonian hallucinations, 68
 Bromberg, W., 324
 Bronner, A. F., 16, 27, 52, 146
 Brontë, Charlotte, 283
 Brousseau, K., 261, 285
 Brown, W., 349
 Browne, C. A., 482
 Brush, C. E., 290
 Brush, E. N., 297
 Brush, N. H., 110
 Bryant, E. C., 482
 Bryant, R. H., 285
 Buchanan, D. N., 451
 Bunker, H. A., Jr., 514
 Burks, B. S., 286
 Burnham, W. H., 83, 88, 96, 145,
 301, 317, 438, 450
- C
- Caffeine, 441
 intoxicating effect of, 443
 sleep disturbance by, 443
 why used, 444
 Calkins, M. W., 364, 399
 Callender, E. M., 310
 Campbell, C. M., 26
 Campbell, H. E., 290
 Cannon, W. B., 8, 26
 Carrington, Hereward, 469
 Carver, D. J., 437
 Castle, Cora, 280
 Cataplectic seizures, 314
 Catatonia, 196
 Cattell, J. McK., 274, 280, 286
 Censor concept, 14
 Charcot, J. M., 133, 145, 505
 Chase, Jessie M., 286
 Chase, R. E., 442
 Child, C. N., 26
 Chorea, Huntington's, 211
 Church, A., 188
 Ciphers, reading of, in trance states,
 491
 "Circular insanity," 230
 Clairvoyance, 471
 Claparède, E., 301, 317
 Clark, L. P., 215, 223, 225, 254, 283,
 424, 426, 434
 Clark, R. M., 261
 Claustrophobia, 99
 Cleveland, C. C., 356
 Cobb, S., 225
 Cocaine, 444
 Compensation, 40
 Complex, definition of, 31
 formation of, 35
 indicators, 410
 inferiority, 37
 morbid, 34
 Œdipus and Electra, 44
 Compulsive acts, 100
 Condensation, 47, 382
 Conklin, Edmund S., 25, 52, 68, 188
 Constitutional psychopathic inferi-
 ority, 268, 270
 Contractures, hysterical, 123
 Conversion hysteria, 144
 Convulsive seizures, hysterical, 117
 Cook, L. C., 324
 Cooperman, N. R., 295, 442
 Coover, J. E., 473, 475, 493
 Coriat, I. H., 77, 78, 96, 112, 145,
 159, 171, 173, 302, 317, 399, 420
 Cory, C. E., 464, 493
 Cowdrey, E. V., 28
 Cox, Catherine M., 274, 286
 Craig, Katherine T., 399
 Creak, E. M., 315

Cretinism, 260
 Crosland, H. R., 408, 426
 Cross correspondence, 490
 Crush form of love, 43
 Cryptesthesia, 471
 Crystal gazing, 416, 475
 Cubberley, A. J., 366
 Culpin, M., 114
 Cutsforth, T. D., 57, 63, 78
 Cutten, G. B., 401
 Cyclothyme, 20

D

- Dallenbach, K. M., 62
 Davenport, F. M., 134, 356
 Davies, A. E., 1
 Davis, R. C., 344, 350
 Davis, T. K., 212, 241
 Day-dreaming, 393
 Dayton, N. A., 255, 257, 259
 Deaf, 55
 dreams of, 375
 defense mechanism, 38
 Definition of abnormal, 2
 DeGruchy, C., 211, 425
 Delirium, 396
 Delirium tremens, 430
 Delusion, 179
 Dementia, definition of, 189
 epileptic, 218
 paralytica (*see* paresis)
 praeocitissima, 199
 praecox (*see* schizophrenia)
 Depression (*see also* manic-depressive psychosis)
 nostalgic, 237
 psychasthenic, 237
 Depth of sleep, 291
 DeSanctis, S., 316
 Devine, Henry, 212, 241
 Diethelm, O., 234
 Diller, T., 146
 Dipsomania, 432
 Displacement, 45, 382
 Dejerine, J., 426
 Dodge, R., 427, 449
 Doll, E. A., 257, 285
 Dooley, Lucile, 283, 286, 425
 Doolittle, G. J., 224
 Doris case, 153
 Dorsey, J. M., 236
 Dowsing, 476, 482
 Dramatization, 383
 Dreams, Chap. XVII
 blindness and, 375
 Bovarium and, 396
 collective, 373
 condensation in, 382
 content of, 364, 369
 day-dreaming, 393
 deafness and, 375
 delirium, 396
 displacement in, 382
 dramatization in, 383
 experimental stimulation of, 366
 forgetting of, 370
 hallucinatory nature of, 370
 kinesthetic, 373
 latent content of, 381
 manifest content of, 381
 mechanism of dream work, 382
 nightmare, 376
 non-freudian theory, 377
 of the dead, 376
 over-determination in, 384
 paralysis dream, 374
 premonitory, 372
 prodromic, 372
 prophetic, 372
 psychoanalytic theory of, 379
 psychoneuroses and, 398
 psychoses and, 397
 psychotherapy and, 405
 recurrent, 375
 regression in, 387
 secondary elaboration in, 383
 symbols in, 390
 sleep depth and, 364
 speed of thought in, 367
 theories of, 377, 390
 types of, 371
 waking consciousness and, 368
 wish motivation in, 384
 Drives, 36
 Drugs, mental effects of, 427
 sleep and, 316
 Dual personality (*see* multiple personality)
 Dubois, P. H., 200, 210, 316
 Dugdale, R. L., 258
 Dunlap, C. B., 201

Dunlap, Knight, 170, 289
 Dynes, J. B., 334
 Dyschiria, 65

E

Earp, J. R., 438, 450
 Ebaugh, F. G., 212, 241, 269, 285,
 324
 Ectoplasm, 469
 Eder, M. D., 146, 409
 Edwards, A. S., 331
 Ego, 16
 Ego-ideal, 18
 Electra complex, 44
 Elliotson, John, 507
 Ellis, Havelock, 281, 282, 286, 399,
 452
 Emerson, H., 427, 449
 Emotional distortions of thinking,
 177
 Encephalitis, Chap. XV
 description, 320
 interpretations, 322
 personality effects, 321
 re-education after, 323
 sequelae, 320
 Epilepsy, Chap. XI
 amnesia in, 215
 aura, 215
 dementia in, 218
 effects of seizures, 218
 equivalents, 217
 frequency of seizures, 218
 grand mal, 214
 heredity in, 224
 interpretations of, 219
 personality in, 222
 petit mal, 216
 variant forms of, 216
 Epileptoid type, 23
 Erickson, M. H., 361
 Escape motivation in hysteria, 132
 Esdaille, James, 507
 Esquirol, J. E. D., 500
 Estabrook, A. H., 258
 Estabrooks, G. H., 329, 344
 Ewen, J. H., 225, 435, 449
 Extraversion, 24, 25
 abnormal, 184
 hysteria and, 129

F

Fantasy thinking, 50
 Farrar, C. B., 240
 Fatigue effects, 174
 Fayerweather, R., 290
 Feeble-mindedness, 243
 alcohol and, 255
 brain injuries and, 256
 causes, 255
 classified by intelligence, 245
 consanguinity and, 259
 cretinism, 260
 delinquency and, 266
 diseases and, 257
 endocrine disturbance and, 257
 experimental studies, 252
 frequency of, 266
 growth relationships of different
 forms, 251
 heredity in, 258
 hydrocephalus, 261
 idiocy, 247
 Idiots savants, 263
 imbecility, 248
 microcephalus, 262
 mongolism, 260
 moronity, 249
 motor skill in, 253
 personality difference, 254
 qualitative differences, 252
 social aspects of, 265
 syphilis and, 255
 Feilding, E., 470
 Fenton, N., 86
 Féré, C. S., 71, 78, 325, 362
 Ferenczi, S., 355
 Fernberger, S. W., 448, 452
 Ferraro, A., 210
 Finley, C. S., 378
 Fisher, G. J., 450
 Fishman, J. F., 446
 Fixation, 40, 43
 Flemming, G. W. T. H., 68, 191
 Fletcher, J. M., 161, 171, 173
 Flournoy, Th., 489, 493
 Fong, T. C. C., 210
 Forbes, T. W., 200, 291, 316
 Fore-conscious, 12, 16
 Foster, J. C., 296, 317
 Fox, C. D., 146, 159

Franks, R. M., 240
 Frantz, A. M., 241
 Franz, S. I., 156, 159, 236, 426
 Fraser, C. F., 78
 Freeman, G. L., 308
 Freeman, W., 315
 Freud, Sigmund, 10, 16, 26, 146, 355,
 380, 391, 399, 423, 511, 514
 Freudian theory, modifications of, 16
 of the psyche, 12
 Frink, H. W., 31, 52, 114
 Fugues, 117
 Fuller, R. G., 204, 233

G

Galen, 496
 Gall, F. J., 502
 Galton, F., 78
 Gardner, G. E., 199
 Garrison, F. H., 514
 Gates, A. I., 8
 Gauckler, E., 426
 Geley, Gustave, 493
 General paralysis (*see* paresis)
 General paresis (*see* paresis)
 Genius, 273
 constitutional psychopathic en-
 dowment of, 277
 degeneracy theory, 275
 prophetic theory, 279
 psychogenic theory, 282
 special trait endowment theory,
 281
 Gesell, Arnold, 202
 Ghosts, 475, 480
 Gibson, W. B., 493
 Giddings, G., 296, 317
 Gilbert, J. A., 96, 306
 Gillespie, R. D., 324
 "Glove anesthesia," 123
 Goddard, H. H., 151, 159, 258, 285
 Goodenough, F. L., 295, 296, 317
 Goodhart, S. P., 85, 96, 154, 160
 Gordon, A., 78, 221
 Gorton, D. A., 514
 Gowers, W. R., 215
 Grab, J. A., 308
 Grant, A. R., 217
 Green, G. H., 376, 391, 399, 441
 Gregory, J. W., 482
 Griesinger, Wilhelm, 503
 Guilford, J. P., 25, 236, 435
 Guilt, feeling of, 110
 Gun, W. T. J., 282
 Gundlach, R. H., 23
 Gurney, E., 69, 493
 Gwathmey, J. T., 333

H

Haines, T. H., 188
 Hall, G. Stanley, 279, 512
 Hall, G. W., 514
 Hallucinations, 67, 73
 affective tone of, 68
 Brobdingnagian, 68
 central theory, 69
 diminutive, 67
 dream, 370
 gigantic, 68
 hypnagogic, 74
 hypnapompic, 74
 Lilliputian, 68
 meaning in, 75
 peripheral theory, 71
 pseudo-hallucinations, 72
 psychoanalytic theory of, 77
 theory of, 69
 Hanna case, 85, 154
 Hargreaves, H. L., 348
 Harry, Gerard, 58, 78
 Hart, Bernard, 27, 159, 178
 argument for theory of uncon-
 scious, 11
 Hassall, J. C., 205
 Hawk, P. B., 442, 451
 Hayward, E. P., 237
 Head, Henry, 94, 96
 Head injuries, 211
 Healy, Wm., 16, 27, 52, 146, 265
 Hebephrenia, 197
 Heigl, P., 442
 Heredity, in epilepsy, 224
 in feeble-mindedness, 258
 Hess, W. R., 305, 317
 Hill, D. S., 452
 Hill, T. R., 324
 Hills, F. L., 514
 Hillyer, Jane, 241
 Hinsie, L. E., 241
 Hippocrates, 495

- Hirsch, N. D. M., 286
 History, Chap. XXI
 Hitschmann, E., 52, 146, 512
 Hoagland, H., 361, 470
 Hocking, A., 296
 Hollingworth, H. L., 103, 131, 146,
 169, 435, 442, 450, 451
 Hollingworth, L. S., 285
 Holmes, G., 220, 226
 Holt, Henry, 493
 Houdini, Harry, 469, 493
 Huddleson, J. H., 285
 Hull, C. L., 325, 327, 329, 334, 336,
 340, 345, 350, 362, 413, 426, 450
 Hunt, J. M., 236, 435
 Hunt, Una A., 148
 Huntington's chorea, 211
 Huse, B., 338
 Hydrocephalus, 261
 Hyperesthesia, hypnotic, 335
 Hypermnnesia, 92
 Hypnagogic, hallucination, 74
 state, 289
 Hypnopompic, hallucination, 74
 state, 289
 Hypnotism, Chap. XVI
 alterations of motor functioning
 in, 335
 alterations of sensitivity in, 333
 appearance in, 330
 Bernheim-Charcot controversy,
 351
 circulation of blood in, 336
 crowds and, 355
 dangers in, 360
 delusions in, 332
 electrical skin resistance in, 343
 hyperesthesia in, 335
 induction of, 327
 memory effects in, 337
 negative suggestion in, 332
 phenomenal in, 359
 plethysmographic studies of, 342
 positive suggestion, 331
 post-hypnotic phenomena, 338
 psychotherapeutic use of, 418
 rapport in, 334
 stages of, 341
 theories for interpretation of, 348
 therapeutic values of, 357
 volition and choice in, 340
 waking from, 344
 who can be hypnotized, 344
 Hypothyroidism, 236
 Hysteria, 116
 anesthesias in, 122
 anxiety states of, 131
 Babinski theory, 136
 causes, 127
 Charcot theory of, 135
 contractures in, 123
 conversion hysterias, 131, 144
 convulsive seizures, 117
 epidemics of, 134
 escape motivation in, 132
 extraversion and, 129
 " hysterical pain," 124
 intelligence and, 131
 Janet theory, 137
 narcolepsy as form of, 121
 paralyses in, 121
 psychoanalytic theory of, 141
 simulation of organic diseases in,
 125
 tics, 123
 tremors, 123

I

- Id, 16, 17
 Idiocy, 247
 Idiots savants, 263
 Ikin, A. G., 392
 Illusions, 65
 abnormal, 66, 73
 borderline, 73
 meaning in, 75
 Illusions vs. hallucinations, 66
 Imbecility, 248
 Inferiority, complex, 37
 feeling of, 111
 Insecurity, feeling of, 111
 Insight, 191
 Insomnia, 308
 Integration of personality, 4
 Intelligence, degree of, and psycho-
 neuroses, 131
 Intelligence quotient, 245
 Intrapsychic censor, 14
 Introjection, 48
 Introversion, 24, 25, 184
 Involutional melancholia, 238

Ioteyko, J., 452
 Itard, J. M. G., 285

J

Jackson, Hughlings, 70, 94, 220
 Jacobson, A. C., 278
 Jacobson, E., 452
 James, Wm., 69, 155
 Janet, P., 19, 27, 104, 114, 119, 126,
 146, 159, 315, 325, 351, 352,
 362, 509, 514, 526
 Jarrett, M. C., 212
 Jastrow, Joseph, 27, 399, 469
 Jefferson, Thomas, 283
 Jelliffe, S. E., 53, 230, 241, 324, 388,
 514
 Jenkins, R. L., 261
 Jensen, D. W., 286
 Johnson, C. H., 452
 Johnson, G. T., 299
 Johnson, H. M., 293, 295, 316, 317,
 318
 Johnson, Wendell, 163, 173
 Jones, E. E., 448, 452
 Jones, Ernest, 14, 27, 355
 Jones, I. H., 78
 Jung, C. G., 25, 27, 53, 188, 205,
 409, 426, 513
 Jung-Eder word list, 409

K

Kahane, Max, 512
 Kahn, Eugen, 2, 268, 270, 285
 Kanner, L., 213
 Kantor, J. R., 344, 350
 Karlson, K. J., 450
 Karpman, Ben, 285
 Kasanin, J., 24, 203
 Katz, S. E., 200, 203, 235, 241, 404
 Kauders, O., 334, 355, 362
 Keller, Helen, 78
 Kellogg, E. R., 340
 Kelly, E. L., 448, 452
 Kempf, E. J., 146, 160
 Kennedy, F., 315, 318
 Kent, G. B., 414
 Kent-Rosanoff association study,
 414
 Kimmings, C. W., 365, 399

Kirby, G. H., 180, 212
 Klein, D. B., 367, 399
 Kleitman, N., 295, 318
 Kleptomania, 101, 111, 270
 Klineberg, O., 286
 Klüver, H., 452
 Kohlstedt, K. D., 200, 236
 Kohs, S. C., 426
 Kolk, L., 446, 451
 Korsakoff syndrome, 431
 Kraepelin, Emil, 504
 Krafit-Ebing, Richard von, 503
 Kretschmer, E., 7, 23, 27, 138, 235,
 278, 286
 Kuhlman, F., 266
 Kuhlman, F. W., 343
 Kure, S., 201

L

Ladd, G. T., 153
 Laird, Donald A., 404
 Lampron, E. M., 204
 Lancaster, E. G., 280
 Landis, C., 200, 203, 210, 235, 291,
 293, 404
 Lange-Eichbaum, W., 278, 284, 286
 Langfeld, H. S., 26
 Lashley, K. S., 442, 451
 Laslett, H. R., 295
 Latent content of dreams, 381
 Lawton, G., 493
 Leake, C., 308
 Leaning, F. E., 74, 78
 Lee, F. S., 289
 Lehman, H. C., 278, 286
 Lennox, W. G., 225
 Lenoir, R., 514
 Leonard, W. E., 114
 Leptosoma type, 23
 Levels of function, 5
 Levine, M., 344
 Levy-Valensi, J., 396
 Lewis, A. J., 241
 Lewis, E. O., 252
 Lewis, N. D. C., 201, 203
 Libido, 41
 Liébeault, A. A., 507
 Lilliputian hallucinations, 68, 76
 Lincoln, A.,
 Lindemann,

Lombroso, Cesare, 275, 286, 510
 Loran, M., 297
 Lord, J. R., 225
 Loring, M. W., 426
 Lowell, F., 415
 Lugoff, L. S., 413, 426
 Lundholm, H., 236, 241, 340

M

MacCurdy, J. T., 27, 146, 241, 310, 400
 Macht, D. I., 436, 442, 450
 Maeder, A. E., 389, 400
 Mahling, F., 64
 Maladjustment, 8, 132, 169
 Malamud, W., 424, 426, 431
 Maloney, E. F., 284
 Malzberg, B., 204, 225, 233
 Manaceine, Marie de, 318, 373
 Manic-depressive psychosis, 227
 depressed phase, 229
 experimental studies of, 235
 hygienic aspects, 240
 interpretations of, 233
 manic phase, 227
 mixed forms of, 230
 personality types in, 234
 physical types and, 234
 physiological interpretation, 233
 psychogenic interpretation, 233
 Manifest content, of dreams, 381
 Marks, Jeannette, 278
 Marquis, D. P., 295, 296, 308, 318, 442, 451
 Marston, L. R., 261
 Martin, L. J., 211, 425, 482
 Masochism, 271, 272
 Matheson Commission, 324
 Mathews, E., 404
 Maury, Alfred, 78, 367
 May, J. V., 191, 194, 212, 241, 252, 268, 285, 514
 Mayer, E. E., 160
 Mays, L. L., 210
 McCowan, P. K., 324
 McDougall, Wm., 6, 27, 53, 85, 114, 188, 310, 349, 434, 435, 443, 470
 McDowell, E. D., 173
 McNeil, D., 322, 324

Mediums, communications through, 489
 fraudulent, 454
 Melancholia (*see* manic-depressive psychosis)
 involutional, 238
 Melsner, R. T., 257, 285
 Memory, abnormalities of, Chap. IV

IV

aphasia, 93
 defect of impression, 81
 defect of recognition, 87
 defect of reproduction, 84
 defect of retention, 81
 false memory or false recognition, 89
 hypermnnesia, 92
 law of regression, 83
 retroactive paramnesia, 91
 unconscious inference, 90
 Mercier, Charles, 229
 Mescal, 447
 Mesmer, Franz A., 325, 501
 Meyer, Adolph, 514
 Microcephalus, 262
 Miles, W. R., 295, 427, 450
 Miller, V. L., 295, 296, 308, 315, 442, 451
 Miller, W. R., 424, 426
 Miner, J. B., 451
 Mitchell, S. W., 452
 Mohr, G. J., 23
 Moll, A., 325, 352, 362
 Moll, J. M., 450
 Mongolism, 260
 Moorehead, W. K., 482
 Moral imbecility, 263
 Morel, B. A., 509
 Moronity, 249
 Morphin, 444, 446
 Mosso, A., 114
 Mott, F. W., 146
 Mühl, Anita M., 475
 Mullin, F. J., 295
 Multiple personality, 147
 Beauchamp case, 150
 causes of, 152
 common misconceptions, 147
 criteria of secondary personality, 153
 general characteristics, 148

- interpretations of, 156
 methods of treatment, 158
 Norma-Polly-Louise case, 151
 possible number in, 153
 reciprocal form of, 150
 Münsterberg, H., 11, 27, 346
 Murchison, C., 202, 493
 Murphy, G., 414
 Muscle reading, 459
 Myers, C. S., 514
 Myers, F. W. H., 69, 471, 493
 Myerson, A., 204, 212, 225, 226, 285
- N
- Nachmansohn, D., 305, 318
 Narcissistic stage, 41
 Narcolepsy, 121, 313
 hysterical, 315
 Nathanson, Y. S., 172
 Nelson, H., 280
 Neurasthenia, 112
 intelligence in relation to, 131
 Neuroses, 97
 "Never-seen" illusion, 87
 Neymann, C. A., 200, 236
 Neyroz, W., 316
 Night terrors, 310
 Nightmare dreams, 376
 Nordau, Max, 275, 286, 510
 Norma-Polly-Louise case, 151
 Norman, Connolly, 78
 Northridge, W. L., 27
 Nostalgia, 237
 Notkin, J., 224, 226
 Noyes, A. P., 114, 146, 191, 210, 212,
 226, 241, 269, 285, 451
- O
- Obsessions, 99
 Œdipus complex, 44
 Oligophrenia, 249
 Oliver, J. R., 241, 426, 514
 Omwake, K. T., 294, 297
 Orbison, T. J., 269
 Ordahl, L. E. and G., 252
 Orientation, 190
 O'Shea, M. V., 450
 Osnato, M., 96, 221
 Oujia board, 464
 Over-determination, 47, 384
 Owens, W. D., 451
- P
- Page, J., 203
 Page, M. L., 253
 Pain, hysterical, 124
 Paladino, Eusapia, 469
 Paralysis, hysterical, 121
 Paramnesia, 87
 retroactive, 91
 Paranoia, Chap. IX, 180
 causes, 185
 frequency of, 183
 querulent, 183
 Paresis, 206
 juvenile, 209
 Parkinsonian syndrome, 323
 Partridge, J. C., 221
 Pasking, H. A., 106
 Paterson, D. G., 252
 Patrick, G. T. W., 306, 433
 Patry, F. L., 324
 Patten, E. F., 340
 Pauli, R., 442
 Pavlov, I. P., 299, 318, 349, 361
 Peabody, R. R., 450
 Pear, T. H., 146, 392
 Perception, defects of cutaneous-
 kinesthetic, 65
 Perlman, V. T., 446
 Personality, determination of pat-
 tern, 403
 epileptic, 222
 integration of, 4
 organization of, 3
 synthesis of, 5
 types, 19, 21, 234
 Peterson, F., 188, 420
 Peterson, G. M., 167
 Pfister, O. R., 53, 359, 426
 Pfungst, O., 460
 Phelps, W. M., 257, 285
 Phobias, 98
 Physical types, 22
 Physiogenic explanations, 28
 Pierce, A. H., 62
 Piéron, H., 289, 299, 318
 Pinel, Philippe, 500
 Pintner, R., 266, 285

Lombroso, Cesare, 275, 286, 510
 Loran, M., 297
 Lord, J. R., 225
 Loring, M. W., 426
 Lowell, F., 415
 Lugoff, L. S., 413, 426
 Lundholm, H., 236, 241, 340

M

MacCurdy, J. T., 27, 146, 241, 310,
 400
 Macht, D. I., 436, 442, 450
 Maeder, A. E., 389, 400
 Mahling, F., 64
 Maladjustment, 8, 132, 169
 Malamud, W., 424, 426, 431
 Maloney, E. F., 284
 Malzberg, B., 204, 225, 233
 Manaceine, Marie de, 318, 373
 Manic-depressive psychosis, 227
 depressed phase, 229
 experimental studies of, 235
 hygienic aspects, 240
 interpretations of, 233
 manic phase, 227
 mixed forms of, 230
 personality types in, 234
 physical types and, 234
 physiological interpretation, 233
 psychogenic interpretation, 233
 Manifest content, of dreams, 381
 Marks, Jeannette, 278
 Marquis, D. P., 295, 296, 308, 318,
 442, 451
 Marston, L. R., 261
 Martin, L. J., 211, 425, 482
 Masochism, 271, 272
 Matheson Commission, 324
 Mathews, E., 404
 Maury, Alfred, 78, 367
 May, J. V., 191, 194, 212, 241, 252,
 268, 285, 514
 Mayer, E. E., 160
 Mays, L. L., 210
 McCowan, P. K., 324
 McDougall, Wm., 6, 27, 53, 85, 114,
 188, 310, 349, 434, 435, 443,
 470
 McDowell, E. D., 173
 McNeil, D., 322, 324

Mediums, communications through,
 489
 fraudulent, 454
 Melancholia (*see* manic-depressive
 psychosis)
 involutional, 238
 Melsher, R. T., 257, 285
 Memory, abnormalities of, Chap.
 IV
 aphasia, 93
 defect of impression, 81
 defect of recognition, 87
 defect of reproduction, 84
 defect of retention, 81
 false memory or false recognition,
 89
 hypermnnesia, 92
 law of regression, 82
 retroactive paramnesia, 91
 unconscious inference, 90
 Mercier, Charles, 229
 Mescal, 447
 Mesmer, Franz A., 325, 501
 Meyer, Adolph, 514
 Microcephalus, 262
 Miles, W. R., 295, 427, 450
 Miller, V. L., 295, 296, 308, 315,
 442, 451
 Miller, W. R., 424, 426
 Miner, J. B., 451
 Mitchell, S. W., 452
 Mohr, G. J., 23
 Moll, A., 325, 352, 362
 Moll, J. M., 450
 Mongolism, 260
 Moorehead, W. K., 482
 Moral imbecility, 263
 Morel, B. A., 509
 Moronity, 249
 Morphin, 444, 446
 Mosso, A., 114
 Mott, F. W., 146
 Mühl, Anita M., 475
 Mullin, F. J., 295
 Multiple personality, 147
 Beauchamp case, 150
 causes of, 152
 common misconceptions, 147
 criteria of secondary personality,
 153
 general characteristics, 148

interpretations of, 156
 methods of treatment, 158
 Norma-Polly-Louise case, 151
 possible number in, 153
 reciprocal form of, 150
 Münsterberg, H., 11, 27, 346
 Murchison, C., 202, 493
 Murphy, G., 414
 Muscle reading, 459
 Myers, C. S., 514
 Myers, F. W. H., 69, 471, 493
 Myerson, A., 204, 212, 225, 226, 285

N

Nachmansohn, D., 305, 318
 Narcissistic stage, 41
 Narcolepsy, 121, 313
 hysterical, 315
 Nathanson, Y. S., 172
 Nelson, H., 280
 Neurasthenia, 112
 intelligence in relation to, 131
 Neuroses, 97
 "Never-seen" illusion, 87
 Neymann, C. A., 200, 236
 Neyroz, W., 316
 Night terrors, 310
 Nightmare dreams, 376
 Nordau, Max, 275, 286, 510
 Norma-Polly-Louise case, 151
 Norman, Connolly, 78
 Northridge, W. L., 27
 Nostalgia, 237
 Notkin, J., 224, 226
 Noyes, A. P., 114, 146, 191, 210, 212,
 226, 241, 269, 285, 451

O

Obsessions, 99
 Oedipus complex, 44
 Oligophrenia, 249
 Oliver, J. R., 241, 426, 514
 Omwake, K. T., 294, 297
 Orbison, T. J., 269
 Ordahl, L. E. and G., 252
 Orientation, 190
 O'Shea, M. V., 450
 Osnato, M., 96, 221
 Oujia board, 464

Over-determination, 47, 384
 Owens, W. D., 451

P

Page, J., 203
 Page, M. L., 253
 Pain, hysterical, 124
 Paladino, Eusapia, 469
 Paralysis, hysterical, 121
 Paramnesia, 87
 retroactive, 91
 Paranoia, Chap. IX, 180
 causes, 185
 frequency of, 183
 querulent, 183
 Paresis, 206
 juvenile, 209
 Parkinsonian syndrome, 323
 Partridge, J. C., 221
 Pasking, H. A., 106
 Paterson, D. G., 252
 Patrick, G. T. W., 306, 433
 Patry, F. L., 324
 Patten, E. F., 340
 Pauli, R., 442
 Pavlov, I. F., 299, 318, 349, 361
 Peabody, R. R., 450
 Pear, T. H., 146, 392
 Perception, defects of cutaneous-
 kinesthetic, 65
 Perlman, V. T., 446
 Personality, determination of pat-
 tern, 403
 epileptic, 222
 integration of, 4
 organization of, 3
 synthesis of, 5
 types, 19, 21, 234
 Peterson, F., 188, 420
 Peterson, G. M., 167
 Pfister, O. R., 53, 359, 426
 Pfungst, O., 460
 Phelps, W. M., 257, 285
 Phobias, 98
 Physical types, 22
 Physiogenic explanations, 28
 Pierce, A. H., 62
 Piéron, H., 289, 299, 318
 Pinel, Philippe, 500
 Pintner, R., 266, 285

- Piotrowski, Z. A., 200, 291
 Piper, Leonora, 484
 Piper case, 486
 Pithiatism, 137
 Planchette, 466
 Plato, 495
 Pleasants, H., 126
 Pleasure principle, 17
 Podmore, F., 69, 325, 362, 493
 Poe, Edgar Allan, 283
 Pollock, H. M., 204, 233
 Pollock, L. J., 221
 Post-hypnotic phenomena, 338
 Potter, H. W., 199
 Potts, W. A., 285
 Pressey, S. L. and L. C., 212
 Prince, Morton, 19, 27, 96, 150, 160, 362, 418, 420
 Prince, W. F., 153, 160, 470, 493
 Prinzhorn, H., 426
 Projection, 47
 Pruette, Lorine, 283
 Pseudo-hallucinations, 72
 Psychasthenia, 98
 depression in, 237
 intelligence and, 131
 Janet psychological tension theory, 106
 theory of, 102
 Psychogenesis and physiogenesis associated, 30
 Psychogenic interpretations, Chap. II, 29
 Psychoneuroses, Chaps. V, VI
 Psychopathic personality, 268
 Psychopathology, definition of, 2
 Psychosis, definition of, 190
 dreams and, 397
 Psychotherapy, Chap. XVIII, 421
 abreaction in, 421
 case history in, 402
 direct question method, 419
 discovery of repressed material in, 405
 dream analysis in, 405
 free association in, 406
 hypnosis and, 357, 418
 multiple personality and, 158
 range of possible use, 424
 speech abnormalities and, 171
 transference in, 422
 Pyknic type, 22
 Pyromania, 101
- R
- Raeder, O. J., 257
 Rank, Otto, 512
 Rapport, hypnotic, 334
 Rationalization, 45
 Raymond, A. F., 201, 241
 Reading of sealed letters and ciphers, 491
 Ready, F. L., 343
 Reality principle, 18
 Reality thinking, 51
 Rechetnick, J., 210
 Redintegration, 103
 Regression, 49, 387
 law of, 82, 207
 Reitler, Rudolf, 512
 Renshaw, S., 295, 296, 308, 318, 442, 451
 Retroactive amnesia, 83
 Retroactive paramnesia, 91
 Rhine, J. B., 474, 493
 Ribot, Th. A., 11, 27, 102, 114, 508
 Ribot's law of regression, 82, 207
 Richet, Chas., 482, 493
 Riddle, E. E., 338
 Riddoch, G., 240
 Riley, R. A., 212
 Rivers, W. H. R., 53, 389, 400, 450, 451, 513
 Rizzolo, A., 437
 Robb, J. R. B., 225
 Robbins, S. D., 161
 Robinson, E. S., 307
 Rosanoff, A. J., 27, 96, 115, 180, 188, 191, 212, 223, 226, 241, 285, 316, 414, 426, 450, 451
 Rosen, Z. A., 24, 203
 Rosett, J., 221
 Ruckmick, C. A., 450
 Rundquist, E. A., 252
- S
- Sadger, Isidor, 512
 Sadism, 271
 Salmon, A., 300

- Sargent, Percy, 221
 Saunders, E. B., 230
 Savage, G. H., 397
 Schilder, P., 334, 355, 362
 Schilling, W., 442, 451
 Schizophrenia, 191
 body type in, 202
 catatonic form, 196
 childhood form, 199
 experimental studies of, 199
 hebephrenic form of, 197
 hereditary defect in, 202
 mixed group, 198
 onset, 198
 organic changes in, 201
 paranoid form, 195
 psychogenic interpretation, 204
 simple form, 197
 skin resistance studies, 200
 sleep in, 200
 Schizothyme, 20
 Schrenck-Notzing, A. F. von, 470,
 493
 Schwarz, R., 199
 Scott, H. D., 340
 Sears, R. B., 334, 362
 Secondary elaboration, 383
 Selling, L. S., 253, 366, 379, 400
 Senile dementia, 210
 Senn, M. J., 308
 Sensory defects, 55, 58
 Sentiment, doctrine of, 6
 Shackle, J. W., 311
 Shanahan, W. T., 226
 Shaw, G. B., 276
 Shell shock, 129
 Shepard, J. F., 290, 303, 318, 349
 Shimoda, M., 201
 Shuttleworth, G., 285
 Sidis, Boris, 71, 78, 85, 96, 154, 160,
 301, 318, 331, 349, 362
 Skaggs, E. B., 2
 Sleep, Chap. XIV
 abnormalities of, 306
 amount of, 295
 blood pressure in, 290
 brain center for, 304
 characteristics of, 287
 chemical theories, 300
 circulation in, 290
 circulatory theories, 297
 depth of sleep studies, 291
 drugs and, 316
 effects of loss of, 306
 electrical skin resistance in, 291
 histological theories, 298
 hypnagogic state, 289
 hypnapompic state, 289
 insane, 315
 insomnia, 308
 intermediary states, 288
 motility studies of, 293
 narcolepsies, 313
 neurological theories, 298
 night terrors, 310
 partial, 296
 physiological studies of, 289
 prolonged states of, 313
 psychobiological theories, 301
 schizophrenia and, 200
 theories of, 297, 305
 walking in, 312
 Sleeping sickness (*see* encephalitis)
 Sleep walking, 312
 Smith, C. W., 252
 Smith, G. E., 146
 Smith, Hélène, 489
 Smith, M., 435
 Smith, M. H., 286
 Smith, W. Whately, 413
 Smoking (*see* Tobacco)
 Snoddy, George S., 235, 236
 Somnambulism, 119
 monoideic, 119
 polyideic, 120
 Southard, E. E., 146, 186, 188, 212,
 243
 Speech, abnormalities of, Chap. VIII
 articulatory defects, 164
 brain lesion forms, 163
 native defects, 163
 personality effects of, 162
 statistical studies of, 161
 stuttering, 164
 treatment of, 171
 Spiritistic phenomena, Chap. XX
 Stalnaker, J. M., 338
 Starr, M. A., 215
 Stead, W. T., 491
 Steen, R. R., 240
 Stefani, S., 321
 Stefanowska, 452

- Stekel, W., 115, 512
 Stereognosis, 65
 Stiles, P. G., 365
 Stinchfield, S. M., 161, 163, 173
 Stoddart, W. H. B., 79, 96, 115, 188, 190, 212
 Störing, G., 79, 96, 188, 212
 Stratton, G. M., 93, 96, 335, 460
 Strauss, E. B., 254
 Strecker, E. A., 212, 241, 269, 324
 Strickler, C. B., 340, 362
 Strongin, E. I., 442, 451
 Stuttering, 164
 imaginal defect theory, 165
 maladjustment theory, 169
 physiological dominance theory, 166
 psychoanalytic theory, 170
 Subconscious, theory of, 10
 Sublimation, 42
 Suggestion and suggestibility, Chap. XVI, 346
 hysteria and, 133
 negative, 332
 positive, 331
 Sullivan, H. S., 424, 426
 Sullivan, W. C., 434, 450
 Super-ego, 16, 18
 Swan, T. H., 293, 317, 318
 Swartz, B. K., 408, 426
 Swindle, P. F., 481
 Switzer, S. A., 442, 451
 Symbolization, 50
 Symonds, C. P., 310
 Symonds, P. M., 404
 Synesthesia, 61, 63
 Synthesis of personality, 5
- T**
- Table-tipping, 461
 Talbert, G. A., 343
 Tanner, Amy E., 491, 493
 Tansley, A. G., 53
 Taylor, C. K., 443
 Taylor, J., 220, 226
 Taylor, W. S., 27, 79
 Telekinesis, 471
 Telepathy, 471
 Telesthesia, 471
 Tendler, A. D., 131
- Tension, psychological, 106
 Terman, L. M., 274, 286, 296
 Thom, D. A., 86
 Thomas, C. J., 68
 Thought reading, 459
 Thouless, R. H., 392
 Thurstone personality schedule, 404
 Thyroid disturbance, emotional effects of, 236
 Tics, hysterical, 123
 psychasthenic, 101
 Ting, G. C., 436, 442, 450
 Tobacco, 435
 after-effects of smoking, 439
 school grades and smoking, 437
 why habit of use, 440
 Tolmachoff, I. P., 482
 Trance states, 483
 physical phenomena in, 468
 physical phenomena without, 459
 Transference, 51, 422
 Travis, L. E., 161, 167, 168, 169, 172, 173, 236
 Treadway, W. L., 446, 451
 Tredgold, A. F., 244, 265, 285
 Tremors, hysterical, 123
 Triplett, Norman, 493
 Tuckey, C. L., 362
 Tuke, D. Hack, 514
 Twitmyer, E. B., 172, 173
 Types, personality, 19
 abnormal relationships questioned, 24

U

Unconscious, 10, 13, 19

V

Valentine, W. L., 295
 Van der Hoop, J. H., 129
 Van Ormer, E. B., 300, 318
 Van Swieten, Gerhard, 498
 Varendonck, J., 400
 Vaschide, N., 318, 400, 478
 Visser, J. W., 285
 Vold, J. M., 400
 Von Economo, C., 318, 319

